

Product Series

THE HAMPTON INSTITUTE TRADE SCHOOL

I CARPENTRY AND CABINETMAKING

PRODUCTS tell a striking story of the aims and methods of the carpentry and cabinetmaking courses offered in the Hampton Institute Trade School. These products are expressed in Negro and Indian mechanics who have gone out among their peoples and are now serving their communities as Christian and efficient builders. They are also expressed in well-built, attractive Hampton buildings and in serviceable accessories of the home and school.

In the busy shops, on the scaffoldings of new structures, in odd nooks and corners of the Hampton grounds, Negro and Indian carpenters have for many years been daily mastering the building art and have been preparing themselves for life's emergencies by learning how to make the best possible use of their resources—time, tools, skill, and moral qualities.

Today the construction of the school buildings and the necessary repairs are being satisfactorily done by student tradesmen. Naturally a good share of this interesting work falls to the lot of the carpenters. A few years ago, when it became necessary to remodel the Principal's home, one of the oldest buildings on the Hampton campus, Negro and Indian tradesmen did the necessary tearing down and building up. These operations were no easy tasks. The bulk of the work had to be done in hot and trying weather. The boys labored with a will. They were happy to have an opportunity of doing well what professional builders considered a difficult piece of work.

Later, when the school authorities decided to add a story to the Armstrong-Slater Memorial Trade School, the student tradesmen again attacked with enthusiasm the laborious task of raising the heavy roof and putting on the second story. Then came the tedious days devoted to finishing the interior work. There was always the joy of doing successfully tasks generally considered beyond the reach of tradesmen in the training.

Again the call came to do some building which would require skill, patience, and endurance. It was the erection of a two-story brick building to be used as a social center by the boys.

Contracts were awarded to the Trade School departments and student tradesmen did the construction work. Today the building stands completed and is known as Clarke Hall. It is used principally by the Young Men's Christian Association. To appreciate the meaning of these three examples of construction work done by the Hampton tradesmen, one must see the completed structures and realize the building problems which the young Negro and Indian tradesmen met and successfully solved.

While construction work calls for ability to read working drawings and follow detailed specifications, the demands made by repair problems are in many instances even more taxing. To make a repair quickly, skillfully, and economically, requires unusual ability. Hampton Institute is indeed an industrial village in which there is constant demand for men who can do good repair and construction work.

Carpentry and cabinetmaking are two of the thirteen Hampton trade courses and for graduation require four years of work in academic and industrial subjects. The reader may be interested in the general summary of the Trade School course which follows, the figures indicating the number of forty-minute periods a week.

First year: Applied mathematics, 2; current events, 1; elementary science, 4; English, 5; literature, 4; mechanical drawing, 6; mechanics, 2; military drill and gymnastics, 3; shop practice, 59; singing, 1; supervised study, 12; trade discussion, 1.

Second year: Applied mathematics, 2; agriculture, 4; current events, 1; English and literature, 5; geometry, 4; mechanical drawing, 6; mechanics, 2; military drill and gymnastics, 3; shop practice, 59; singing, 1; supervised study, 12; trade discussion, 1.

Third year: American history and civics, 4; Bible, 4; book-keeping, 2; business law, 2; current events, 1; English and literature, 5; mechanical drawing, 6; military drill and gymnastics, 3; shop practice, 59; singing, 1; supervised study, 12; trade discussion, 1.

Fourth year: Algebra, 4; economics and sociology, 4; general history, 4; English, 4; literature, 4; military drill and gymnastics, 3; shop practice, 24; psychology, 4; singing, 2; study, 21.

The carpenter and the cabinetmaker at Hampton Institute learn when they enter the technical shop that they must take good care of the excellent equipment of tools and machines which the friends of the school have so generously provided. The newcomers are taught to work from shop drawings and to strive for accuracy and neatness. Then come the technical exercises, including the squaring of pieces of wood, blocking up ends,

ing and sawing to given marks, chiseling, the making of a variety of joints—butt, mitre, lap, mortise and tenon, and dovetail. After the boys have learned to do well and on a reduced scale the technical exercises with which every good carpenter should be familiar, they apply their technical knowledge to the making of that which is useful and attractive—tables, cases, stands, and the like.

While the carpenter or cabinetmaker is engaged in learning the technical branches of his work, he also has the opportunity of becoming acquainted with some of the allied trades and of receiving preparation for larger service as a house builder



TECHNICAL CARPENTRY

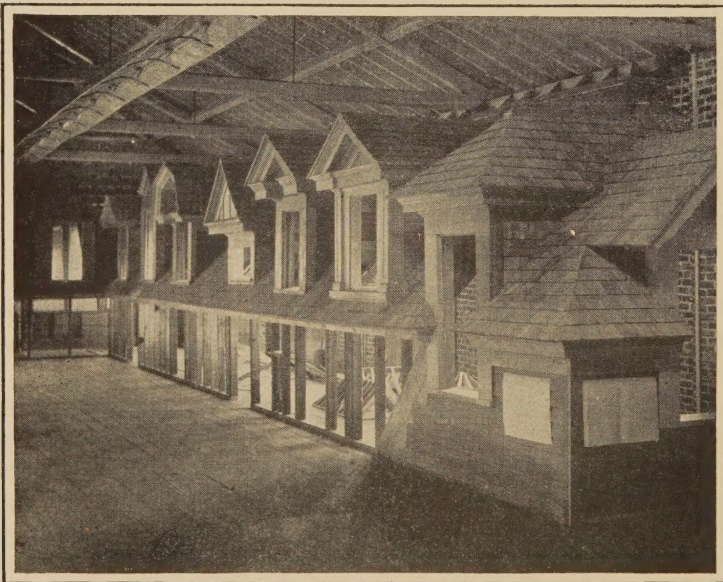
and community worker. The extra work includes tinsmithing, painting, woodturning, bricklaying and plastering. He also spends four hours each week in the drafting room.

In the doing of technical exercises and the application of the fundamental principles of carpentry to common forms of construction and repair work, the Hampton student has to learn well the theory and practice of board measure and estimates. Under the heading of trade mathematics, the carpenters and cabinetmakers learn together in the technical carpenter shop the common methods of making calculations involved in trade problems. They are taught to apply the fundamental processes of mathematics to such problems as figuring the amount and cost of

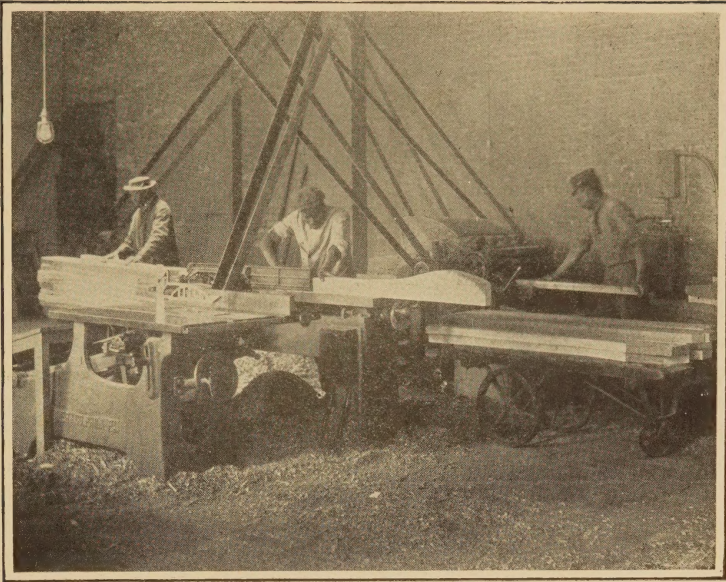
materials required for specific pieces of work. Here the aim is quickness and accuracy.

During the entire carpentry and cabinetmaking courses the Hampton students combine technical and practical work. They construct in the technical shop, for example, full-size door and window frames, make sashes and doors, and learn how to put on the common forms of hardware. In all these operations they have to work from regular shop drawings. The applied work in carpentry includes the necessary construction and repair work which is done on the one hundred and thirty-five Institute buildings. How can the work be done with student labor? This is a common question with visitors. The answer is that the Hampton boys are in dead earnest. They come to school to learn; they do what they are told to do; they make good. The boys are sent out on repair work singly or in small groups. They are given simple directions and rough sketches or drawings, and are expected to finish the tasks assigned to them. The students are thus given an opportunity of shouldering responsibility and of developing initiative, judgment, and executive ability. Then, too, they receive the benefit of close supervision in the regular shop work and in the building or repair operations by teachers who are themselves skilled mechanics.

The aim in the practical carpentry work, especially after the



DORMER-WINDOW CONSTRUCTION



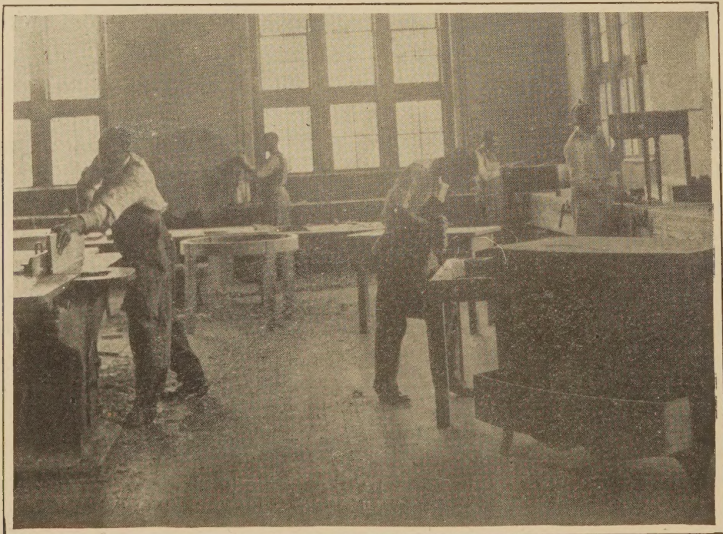
WOODWORKING MACHINERY

early technical training, is to prepare the tradesmen to do well, economically, and with the common tools, as much work as possible in a minimum of time. They are taught to handle their tasks like skilled workmen. The equipment in the carpentry and cabinetmaking shops is good; the materials used are of the best; the instruction is complete as possible. The boys learn to use the ordinary wood-working machines—planer, circular, band, and jig saws, jointer, shaper, mortise, tenon, and pulley machines and lathes. They also learn how to manage individual motors. They receive for use during their course a complete kit of good tools, being charged with the cost of those which are lost or carelessly abused. They receive compensation for all repair and construction work, in this way earning some five or six thousand dollars a year which they use in helping to pay for their education.

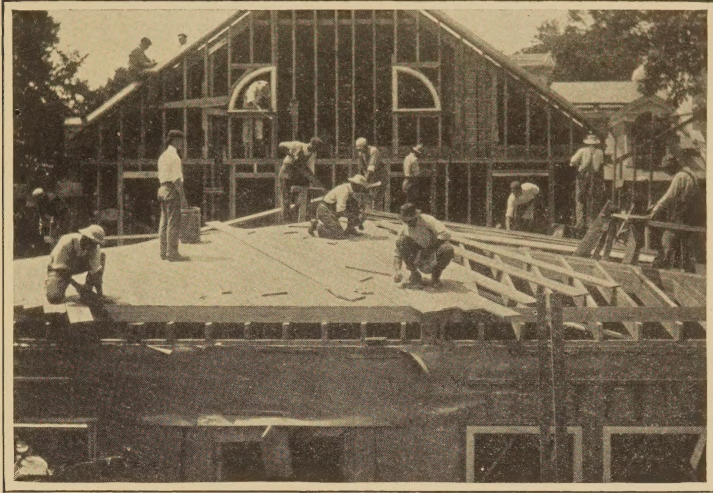
In order to carry on technical and practical carpentry side by side throughout the course, the principles of good carpentry are applied at every turn to some building or repair operation. One piece of interesting technical work which has commanded considerable notice is a series of thirteen dormer windows, built by senior tradesmen working in pairs and within set limits as to space. The instructor, after explaining to the students the principles of dormer window construction gives each pair of student workmen the width of the desired dormer from outside shingle to outside shingle and the size of the glass opening. Then he requires a rough sketch, a design, a working drawing, and an estimate of

the material needed to complete the dormer window. To do this work satisfactorily, the student must use his initiative and judgment. He must be master of the task before him. The instructor gives no help until he is called upon. If in his judgment the students should work out their own salvation, he offers nothing more than a suggestion or simply raises one or two questions, the answers to which may help in solving the difficulty. If a real need arises, then the instructor stops to discuss the problem, not with one or two boys, but with the whole group at work on dormer-window construction. The aim here is to train men to think effectively and save them from the weakening effects of too much assistance. After the drawings and estimates have been checked up and approved, the student carpenters proceed with their construction problem. In this single exercise the tradesmen receive review and application work in rough framing, roof framing, setting a window, putting on a cornice finish for either slate or shingles, shingling, putting on the necessary tin work, and other important operations involved in good carpentry.

Another interesting piece of technical work done by the Hampton senior carpenter is that of making a model of a fairly difficult roof, about one-sixth of the full size, from an original design and drawing made by him in the drafting room. Before beginning work on his model the young tradesman is given a sheet of paper and a steel square. He is then required to find all the lengths and cuts of the rafters. He next figures the actual area of the roof—a neat problem in mensuration that is really worth while—and makes the necessary allowances for



CABINETMAKING



PRACTICAL CARPENTRY

waste. The next step is to find the number and the cost of rafters—a practical application of *real* trade arithmetic. All this information must be furnished to the instructor and approved before the student is allowed to get a single stick of lumber. When all the preliminary work for his model roof has been done, he must then pick out at one selection the right kind of lumber, enough and not too much.

His next step in making the model roof is to cut out *all* his work before he begins to do any nailing. The skillful use of well-made drawings, the manipulation of the steel square, combined with good training in the principles of carpentry, make this difficult task possible of accomplishment by student tradesmen. Whenever there is to be overcome an actual difficulty which is beyond the student's grasp, the instructor comes in and helps to ferret out the reason for the failure to make joints come right.

Stair-building offers another excellent field for testing the skill of the carpenter. Through lectures he is made acquainted with the factors and principles involved in this problem. In the drafting room he learns to draw to scale and to design several types of stairway. Then, in the shop, he is told to build a stairway in a given height after he is told the number of winders. He must build it in a manner which will meet the approval of skilled journeymen.

The cabinetmakers in the first year of their trade receive instruction in the technical carpentry shop and have the same lecture work as the regular carpenters. In the remaining years of the course the cabinetmakers receive special instruction in



INDOOR CONSTRUCTION WORK

joinery and carving, which leads on to the construction of furniture with good lines and proportions and of attractive articles for the home and school, including cases, desks, chests, screens, trays, and tables. They are also taught upholstering, wood-turning, furniture staining, and the finishing of various woods. They learn how to use properly and effectively walnut, pine, cedar, bass, cypress, and mahogany. Like the carpenters they prepare rough sketches and then finished drawings of their work. They are encouraged to do some furniture designing. They, too, have good tools and machines with which to work. In Clarke Hall may be found some of the best products of these tradesmen.


The carpenters and cabinetmakers, have, in addition to special discussions on trade problems, regular shop talks one hour a week throughout three years of their respective courses. The talks aim to give the students a wider knowledge of the raw materials, tools, and principles with which they have to deal in working out their daily problems in the shop, on the repair job, or on some new building. Some of the interesting topics covered in the trade discussions and shop talks are: The uses and special purposes of woods; the seasoning and drying of lumber; various classes of structures; framing joints; the general method of framing; the sizes of timbers for framing purposes; roof framing; a lumber list for use in estimating; a hardware list; practical rules for estimating; trade words and their meanings.

In another series of shop talks the carpenters receive instruction in the relation of the contractor to the architect, the owner or real-estate agent, the dealers and sub-contractors, and the workmen; the reading of plans and specifications; the making of building contracts; general contracting or sub-letting; the buying of materials; and common building law. In the cabinetmaking course the students have, in addition to the shop talks on the general principles of joinery, special instruction in historic styles of furniture and in the construction of articles usually made by cabinetmakers.

Speed, accuracy, judgment, initiative, earnestness, neatness, responsibility, conduct—these are some of the important factors which are considered in determining the grading of Hampton tradesmen. The results thus far secured in the training of carpenters and cabinetmakers have been very satisfactory. Today Negro and Indian young men, trained in the Hampton Trade School, are serving their communities as good mechanics or contractors and, at the same time, are also active workers in the church and Sunday school, carrying out the ideas for which Hampton Institute has stood during forty-five years.



HOUSE REMODELED BY HAMPTON TRADESMEN



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THE HAMPTON INSTITUTE TRADE SCHOOL

II BLACKSMITHING AND WHEELWRIGHTING

“ Self-support must go along with Christian living. It is hard to be honest if you are starving. A man who can support himself is more likely to lead a Christian life. ”

SAMUEL CHAPMAN ARMSTRONG

“ IF you don't believe that it takes some real, worth-while education to shoe a horse properly, then try to shoe the next horse you see. ” William Hodges Mann, of Virginia, frequently uses words to this effect to give added force to his public appeal for practical, common-sense training of all classes for special service to the community. Hampton understands fully the importance of applying Governor Mann's idea to the making of blacksmiths and wheelwrights, as well as other tradesmen, teachers, and farmers.

Why is it that blacksmiths and wheelwrights who are trained at Hampton meet unusual emergencies when they are thrown out in the world to make their own way as journeymen, as teachers of blacksmithing and wheelwrighting, or as independent owners of their shops ? What is there in Hampton's system which promotes initiative, application, and general efficiency ?

From the minute a Negro or Indian boy enters the blacksmith shop at Hampton he is put to work at his trade. He is shown how to move about his forge in a comfortable, natural manner. He is shown how to build a fire properly and then he is assigned the task of building a fire which will stand the test of inspection. At every turn, the boy is shown, not only how to do the work that the blacksmith must know how to do, but he is given the why and wherefore of the processes which enter into the blacksmithing trade and must be mastered.

The beginner is not merely a shop helper or handy man who mechanically does the striking for another man or simply waits on some superior. From the start, the blacksmith-in-the-making comes in touch with a system of instruction which abounds in common sense and practicality. He learns to do his work accurately and neatly. He learns his first lessons partly through imitation, for shop demonstrations are frequent and to the point. The student is encouraged to ask questions and to work out, with

the help of his instructor, satisfactory answers. If the task, for example, is that of building properly a forge fire, then the properties of coal, the heating of iron, and the control of the blast are some of the questions which receive careful attention.

Hampton takes boys who are "green from the woods" and, by careful training, through tasks of graduated difficulty, develops tradesmen who learn to do the so-called common tasks of life with skill and understanding. The school itself, which is an industrial village, furnishes a variety of work, which makes it possible to give Negro and Indian students the tasks which they need to develop their latent powers. Whenever a wagon is built in the wheelwright shop, it is passed to the blacksmiths to have the necessary iron work properly fitted. The axles are welded; the wheels are fitted with the tires; and the springs are fastened or clipped to the wagon gear. The iron which is used on the wagon is carefully measured, worked into shape, and properly fitted on the body and gear built by the wheelwrights. If work has to be done on a school boat, then the blacksmiths and wheelwrights, along with other tradesmen, are on hand to do the necessary repair or construction job.

When fire escapes and fire ladders were needed for the dormitories, the blacksmiths were assigned to the work. When ornamental iron work was called for in the construction of the new Y. M. C. A. building, Clarke Hall, and the remodeling of the Principal's house, the blacksmiths were again assigned some difficult and important work. Then, again, the necessary repair work on farm implements and farm wagons, which are in daily use on the home farm and at Shellbanks, the large school farm some six miles away from the main Hampton buildings, is done satisfactorily by the Trade School blacksmiths and wheelwrights.

Hampton tradesmen not only do the repair and construction work for the school, but they also do a considerable amount of commercial work. This includes, for the blacksmiths and wheelwrights, the making of railroad and wharf trucks in some twenty-five styles, and the building and repairing of wagons, as well as a variety of carts and wheelbarrows. Attractive andirons, sets of fire tools, fire screens, well-made forging tools—these are some of the interesting products of the blacksmith shop.

The boys at Hampton who take the regular course in agriculture spend half a day a week for two months in the blacksmith shop, and there they learn to make the simple iron articles which are commonly used on the farm, including staples, links for chains, lap links for traces, and hame hooks. These agriculture boys receive drill in the principles of blacksmithing and are given enough practice so that at the end of their brief course they are able to do the ordinary blacksmithing work required on the farm.



WHERE GOOD BLACKSMITHS ARE MADE

They also find out that they can buy a small and suitable blacksmithing outfit at a small cost.

To understand how the Trade School is able to do such a



BLACKSMITHS IRONING WAGONS AND CARRIAGES

variety of blacksmithing work with boys who are crude at the beginning, one must follow, step by step, the training that is offered in the Trade School. After a boy has learned to make his forge fire, he is given a piece of iron about half an inch in diameter and thirty inches long and is first required to make a square point on one end. This apparently simple operation requires patient practice. Hampton insists that no work shall be accepted until it is well done. After a boy has mastered the making of a square point, he passes to the making of a round one, and then a flat one. Meanwhile, he learns how to handle the blacksmith's hammer; how to get the proper wrist and elbow motion; and how to handle his muscles to the greatest advantage. Then, too, he learns more and more about the handling of his forge fire. Such knowledge as the proper use of green coal, and of heat itself, becomes his own through the mastery of carefully supervised and graduated tasks. When the thirty-inch piece of iron gets so short that a boy cannot hold it without burning his hands, he receives a new piece of iron and is taught how to make a weld. Step by step, he turns out, according to specifications and blueprint drawings, some seventy-odd technical exercises during his first year of Trade School work. Drawing out iron, making staples, bending rings, making a hook and eye, developing a gate hook, fashioning bolts and nuts of various sizes and shapes, welding rings, constructing braces, chain links, square bands, making chisels, drills, springs, lathe tools, horseshoes, carriage steps, scrapers—these are some of the technical exercises in iron and steel which the Hampton blacksmith learns to do.

The students in the blacksmith shop take regular turns in shoeing the horses and mules that belong to the school. Nobody is ever allowed to abuse a horse or a mule. Every boy is taught to do his horseshoeing work with due regard to the animal's needs.

Along with the practical work over the forge and anvil, the tradesman studies from a simple text the facts concerning iron and iron working, iron forging and welding, fuels, steel and steel working. He also studies the use of the tools that the blacksmith needs in his everyday shop practice. The text, which is carefully studied, contains, in question and answer form, the facts which the blacksmith needs to know.

During the Saturday morning lectures and demonstrations, students take up in greater detail the technical side of their work and learn the ins and outs of their trade by coming in contact with definite problems and by reasoning out together with their instructors the *how*, *when*, and *why* of processes with which they have to deal every day.

The story of a typical Hampton tradesman follows: "A student



FULL-SIZE DRAWINGS ARE USED IN MAKING GEARS

who now has a blacksmith shop in Richmond, Virginia, by his attention to business, settling his accounts promptly, and general good character and habits, so impressed a salesman for a



TO MAKE GOOD WHEELS REQUIRES PATIENCE AND SKILL

Baltimore firm with the value of the training Hampton students receive that he has been recommending them for positions in Virginia and North Carolina for several years. He has also called attention, from time to time, to good openings for shops and has helped some of the Hampton students to get started in business for themselves. He recently said that not one of the students he had recommended had failed to please or to make good, and that by their good work they are inspiring confidence in their race."

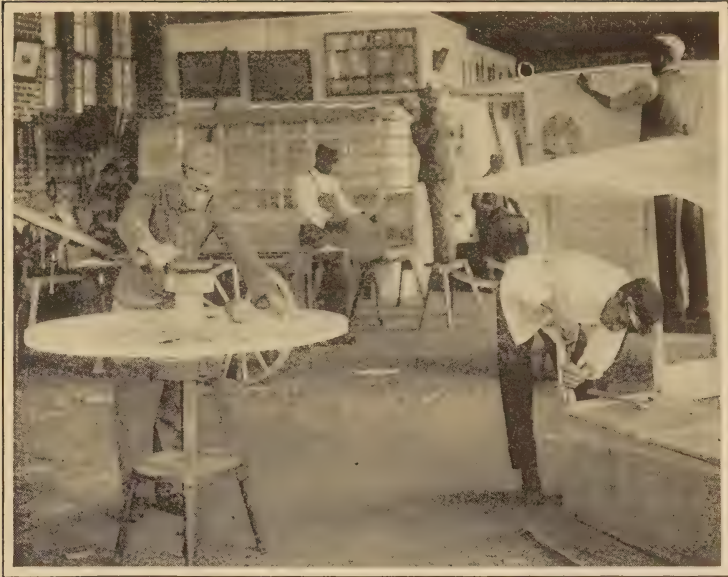
Although blacksmithing and wheelwrighting are taught at Hampton as two distinct trades, every effort is made to show students the close relation of one to the other. The blacksmith, during his course, receives some training in wheelwrighting, and the wheelwright, in turn, receives some practice in blacksmithing. In a number of cases, a blacksmith will take, after finishing his own trade, a year of special work in the wheelwright shop, while the boy who has received his wheelwrighting certificate will often take a year of special work in the blacksmith shop. The fact is recognized that the wheelwright and the blacksmith must work over many problems in common. For this reason, all that has been said concerning blacksmithing can be applied, with appropriate changes, to the work of wheelwrighting.

Technical work is given the wheelwrighting students to teach them how to use their tools effectively and how to make the common and special joints required in their work; how to select and dress timber and work it to given sizes. To do the essential operations, a boy has to use a number of different tools and wood-working machines, cross-cut, rip, and bandsaws, planer, jointer, shaper, mortiser, turning lathe, and boring machine. Then there are working drawings of a variety of joints which are made so as to give training for wagon work in which some joints must not show. When a boy builds a wheelbarrow he must know at every turn why he does this or that. As a part of his work he must lay out full-size drawings in the shop.

Later in the course, the wheelwright applies his technical knowledge to commercial work—the making of railroad and wharf trucks, the building of carts and wagons, the repairing of carriage and wagon bodies, the putting on of rubber tires, making new rims, respoking wheels, and doing general repair work. On the repair jobs boys labor together and thereby learn to develop initiative and the ability to work well with their fellows.

The wheelwrights have good tools to use, and also good general equipment for all their trade work. They are required to take the very best care of the material and tools that Hampton has placed at their disposal.

The shop talks cover such matters as the care and dressing of tools, the proper methods of laying out work, cutting and fitting



WHEELWRIGHTS BUILD CARTS, WAGONS, VANS, AND CARRIAGES

timber for regular wheelwright problems, discussions dealing with suitable materials for the various parts of wagons and carriage construction, cost of material and labor, seasoning and handling of timber. Students keep written notes and sketches



HAMPTON'S HORSES AND MULES ARE CAREFULLY SHOD

of the shop talks, which are regularly given every Saturday morning, and, indeed, whenever some important question comes up during the working out of a regular wheelwrighting problem.

Wheelwrights and blacksmiths, when they leave the Hampton Trade School, can readily find work as journeymen in the South. The Negro or Indian boy who is prepared to do his trade work well does not lack the opportunity of securing profitable employment. The demand for skilled workmen is growing.

The students are encouraged to return to their home communities and there put in action the ideas which they have gained at Hampton. Service and efficiency are emphasized at every turn during the courses which are given in the Hampton Institute Trade School.



THE HAMPTON INSTITUTE TRADE SCHOOL*

III BRICKLAYING AND PLASTERING

"Instruction must be considered as much as production. The shop is for the boy, not the boy for the shop."

SAMUEL CHAPMAN ARMSTRONG



"ABOUT the third day of my trade my instructor came to me and, commenting on my work, said, 'That is very good, Smith.' This was all I wanted to hear. That day I was so proud of bricklaying that I wore my work shoes to the dining hall. Everyone looked at them, but I did not care; I wanted people to know that I was a young bricklayer."

These significant words were spoken at a recent Hampton Anniversary by a Negro bricklayer who had finished his trade and, as his final exercise, was giving, before a great audience of white and colored people, a practical demonstration of the stages through which the Hampton bricklayer must pass. Joy and pride in trade work characterize the Hampton student. Train-

ing and result go hand in hand in all of Hampton's classroom and workshop activity.

It was with radiant face and skill of hand that Hugh C. Smith told, with the aid of mortar, trowel, and bricks, the effective story of his first steps in bricklaying. Liberal quotations from this boy's Anniversary address will give, perhaps, a better idea of some of Hampton's aims and methods than any purely informational study.

"The first thing a student is taught when he enters the Hampton bricklaying department is how to take mortar up on his trowel. Our instructor told us not to push the trowel point into the mortar, but to take the trowel and cut the mortar angle shape.

* "Carpentry and Cabinetmaking," May 1913; "Blacksmithing and Wheelwrighting," January 1914

Being a very green fellow when I entered the department, I found this difficult to do, but I did not give it up. I worked away at this task for nearly a whole day, and late in the afternoon I found that practice was about to bring success. I could take the mortar up properly.



PLASTERERS AT WORK IN THE PRINCIPAL'S HOUSE

"Now I was ready to start spreading mortar. Spreading mortar properly is one of the hardest things a beginner has to learn to do. I have seen bricklayers who have worked at their trade for more than a generation and are still unable to spread mortar correctly. They take their trowels and simply shake off the mortar just as a man would shake seed from a board used in planting. We were first taught to spread mortar on a board. Every time I tried to get the mortar off my trowel, or tried to spread it as my instructor had shown me, every bit of it came off the trowel at once.



TECHNICAL WORK IN THE SHOP

“ After five days’ experience at mortar spreading I was actually ready to begin laying bricks. The first exercise in the laying of bricks is to place them end to end. The next exercise is to run a little wall, starting with four bricks and running up to one brick. A tedious thing that came into this exercise was pointing the joints ; that is, smoothing the mortar in them. As soon as the wall is built it is torn down and rebuilt several times. Thus, at the beginning of the course, we get as much practice in tearing down as we do in building up.



PRELIMINARY WORK ON A LOGGIA

"The fourth exercise given to bricklayers is to form a corner. The square is used in squaring corners and jambs. After running the corner up three courses, it is time to stop and plumb it. The plumb rule is a very difficult tool to handle. One may see men standing in all kinds of positions when plumbing their work, but there is only one right way to stand in plumbing a corner. One should stand with the plumb rule in front of him.

"Last year's Senior bricklayers had a chance to demonstrate their skill in running English bond on Clarke Hall, our new Y. M. C. A. building, of which we are so proud.

"With the instruction I have received here at Hampton in the academic department, in mechanical drawing, and in bricklaying, I am about to go forth, ambitious to join the world's best mechanics."

The course in bricklaying and plastering consists of tasks of graduated difficulty. After having become proficient in laying a plain wall, students are given a little speed work. They are tested first, however, on their accuracy. Boys work from blue-prints and complete an interesting series of practical shop exercises. They learn how to build a small corner, consisting of perhaps twelve courses; how to lay a four-inch wall with the American bond; how to raise a wall that must be built to a given line; how to do foundation work; how to construct piers, chimneys, and fireplaces; how to lay off and construct segmental, circular, and



BUILDING THE SECOND STORY OF THE HAMPTON TRADE SCHOOL



STUDENTS CONSTRUCTING A GRANOLITHIC WALK

elliptical arches. The technical work which the bricklayers and plasterers do indoors is as nearly full size as possible. Indeed, the shop work, as far as it is carried, is full size and is made as practical as if it were to become permanent.

Negro and Indian tradesmen are taught how to use and care for the regular tools of their trade—the trowel, the hammer, the chisel, the plumbing rule and bob, and the steel square. They learn to make the practical calculations which are required in their everyday work. They are encouraged to read the standard trade journals and textbooks. The Hampton students have excellent equipment for all their trade work.

The bricklaying and plastering department was organized in 1896. The first construction work done by the department was the building of a wing of the school Laundry. The Armstrong-Slater Memorial Trade School was built in 1896 by non-student labor. Only one Hampton Institute bricklayer worked on it. Then, in 1898, the Domestic Science and Agricultural Building was constructed and four Hampton boys helped to build its walls. Next, Cleveland Hall, containing a large school chapel and a comfortable dormitory for girls, was erected, twelve Hampton tradesmen being employed. When the school's large barn was constructed in 1905 not a single outside man was hired to do any of the brick work. Other interesting building operations that have since been carried to completion without outside labor, except that furnished by Hampton ex-students, include the remodeling of the Huntington Industrial Works and the Pierce Machine Shop into boys'

dormitories, and the construction of the substantial house now occupied by the school's assistant disciplinarian, as well as the erection of Clarke Hall, the new and attractive \$30,000 Y. M. C. A. building, to which Smith referred in his Anniversary address.

The bricklaying, plastering, and granolithic work of the Institute is now done entirely by Hampton tradesmen. A few figures, giving the summary of one year's work, will be some indication of the unusual opportunity that the students have for practical training : Bricks laid, 237,816 ; granolithic walks constructed, 482 square yards, plastering done, 4049 square yards.



STUDENTS LAYING THE FOUNDATION OF THE Y. M. C. A. BUILDING

The students in the bricklaying and plastering department touch the life of the Hampton School at many points. They set boilers in the power house ; build the bake ovens which are used in the kitchens ; repair the plastering in the students' dormitories and other school buildings ; keep the granolithic walks in repair ; and do the necessary construction work in connection with the erection of new buildings. When one of the boys' dormitories was converted from an open dormitory into one with enclosed rooms, the students in the bricklaying and plastering department rendered excellent service. Then, too, when the school decided to add another story to the Hampton Trade School, bricklayers and plasterers did their part of the work most satisfactorily.

In building Clarke Hall, Hampton student bricklayers set all the stone and laid all the brick. The columns of the loggia, made

of moulded brick and set on seven diameters, formed a very complicated piece of work. In this structure the students had to construct flat arches and panels of various kinds. This building, indeed, has been an excellent *demonstration* of the fruit of the practical training which Hampton tradesmen receive.

Builders and those who are in a position to pass expert judgment on Clarke Hall, as a specimen of good building activity, declare that it is first class in every way.

Instruction in plastering is also given to the Hampton bricklayers. The boys begin with exercises in trowel handling and



CLARKE HALL, THE Y. M. C. A. BUILDING, COMPLETED IN 1912 BY
HAMPTON TRADESMEN]

then pass on to work on plain walls and the different kinds of arches that are commonly used in modern building practice. They are taught how to use the common tools with which the average plasterer must earn his living. Here, again, the Hampton students receive a wide range of practical training in the construction and repair work done on the numerous school buildings.

The agriculture boys at Hampton receive instruction in the bricklaying and plastering department one day each week for three months. They are taught concrete work and the building of small piers, fence posts, and water troughs. They also have some elementary work in plastering. Boys who are taking the regular trade-school course in carpentry receive about twice as



A PRODUCT OF THE HAMPTON TRADE SCHOOL

much work in the bricklaying and plastering department as do the agriculture boys. They are taught in the technical shop how to do plastering and how to build piers, foundations, chimneys, and fireplaces.



BARN AT HAMPTON INSTITUTE BUILT BY SCHOOL TRADESMEN

The Saturday morning shop talks cover a wide range of subjects. Sometimes a boy is assigned a subject and has to present his topic in the form of a practical demonstration before his classmates. Some of the subjects which are discussed by the instructor and the students during the Saturday morning sessions, are the methods and operations involved in brickmaking, the manufacture and use of cement, the principles of construction, and the meaning of important trade and technical terms used in bricklaying and plastering.

Laying bricks carefully and neatly to a given straight line, plumbing corners accurately, working with one another without friction, following blueprints exactly, tackling with enthusiasm difficult repair problems, getting ready to do things in the work-a-day world by doing practical work during school days, combining theory and good modern practice—these are some of the important lessons which Negroes and Indians learn in the bricklaying and plastering course in the Hampton Institute Trade School.

The test of all Hampton's work for individual and race uplift is found in the results which can be observed on the school grounds and in the records of the graduates and former students who are winning the respect and good will of the best white people throughout Virginia and the Southland. The bricklayers and plasterers who have gone out from the Hampton Trade School since 1900 are making their way successfully as journeymen, as teachers, and as contractors. They are carrying into their everyday living the lessons of thoroughness and reliability which they learned at Hampton Institute through constant drill, careful supervision, and wise counsel. They have gone forth, not only as builders of walls and chimneys, but also as builders of Christian character.



THE HAMPTON INSTITUTE TRADE SCHOOL *

IV MACHINE WORK

"Character is the best outcome of the labor system. That makes it worth its cost many times over. It is not cheap, but it pays."

—*Samuel Chapman Armstrong*

RECENTLY, when the Hampton Institute printing department was moved from its old quarters in one of the dormitories to the Trade School Building, eight of the boys in the machine shop, working under the direction of an assistant instructor, dismantled a Babcock "Optimus" printing press and then re-assembled it without losing or breaking a single part. They also moved most successfully a large Dexter folder, a power paper-cutter, and two job presses. A little later the machinists built for the printing office six steel type racks and two good-sized metal composing stones on which the type is put, page by page, into a chase or form for the printing press. They also built in the press room an overhead, a traveling crane for handling heavy boxes of paper. From the interesting round of common duties at Hampton, this is a sample of the useful and educative work which is repeatedly done by Negro and Indian student tradesmen.

Hampton machinists build a large number of gasoline engines. A four-cylinder, thirty-horsepower engine, for example, has been installed in a fast motor boat, built by a Hampton student, which darts back and forth along the picturesque waterfront of the school.

"The Hampton Institute Gear," patented by the instructor in the machine shop and turned over to the Trade School, is a marine reverse gear which "has been highly spoken of by those who have inquired into its merits." It is made, in limited numbers, in sizes ranging from eight to sixty horsepower. These gears have been sold for service in boats plying on American and foreign waters. After having been thoroughly tested by the United States Government, they have been installed in some of its own boats.

Horizontal and vertical separators, ranging in size from two to twelve inches in diameter, are now made by the student

* "Carpentry and Cabinetmaking," May 1913; "Blacksmithing and Wheelwrighting," January 1914; "Bricklaying and Plastering," 1914.

machinists. These separators are used principally in main steam lines to separate water from steam and thus prevent the wrecking of steam-engine cylinders. They are also "employed where exhaust steam is used for heating or other purposes and the returning condensation is utilized as feed water for the boiler." Then, too, they remove oil and other substances, thus keeping impurities from reaching and injuring the boiler. For a time, the Hampton Trade School built separators for another firm, but there came so many calls for them that the school finally took over the patents and began to build the separators independently. Since the work in the machine shop, as in all the other Trade School departments, has an important educational aspect and is

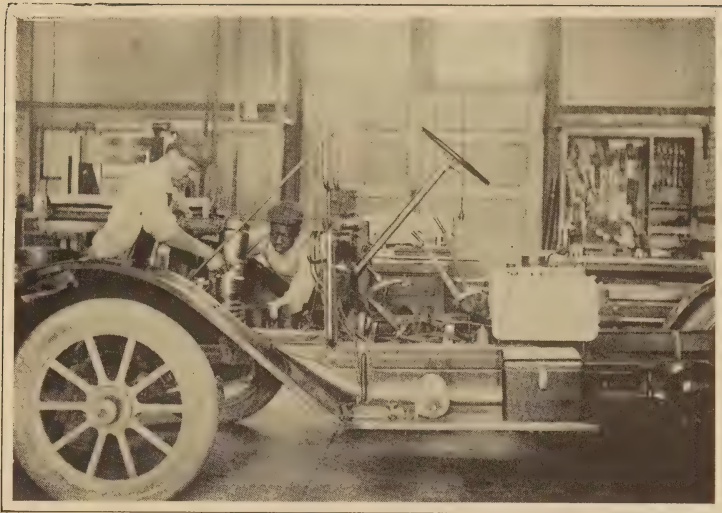


A PORTION OF THE INTERIOR OF THE MACHINE SHOP

not purely commercial, the number of separators built annually is limited. This is true of all the work handled in the machine shop and in the Trade School as a whole. An order for a large number would have to be rejected, because the aim of Hampton Institute is to use the shop for the best interests of the boy and not to make the boy a mere shop tool.

Repairing and rebuilding automobiles give the students plenty of work that requires skill, patience, and judgment. Two or more automobiles in the repair state are commonly to be seen in the machine shop. Learning by doing thus becomes an educational practice and not simply an educational theory.

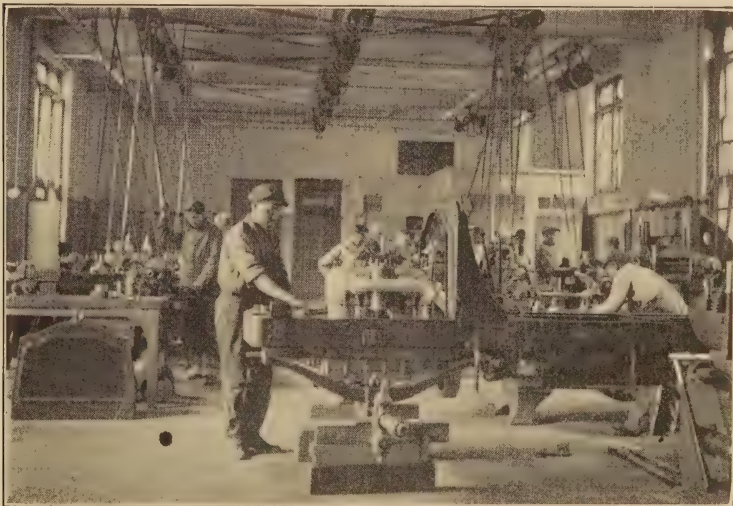
Machines which are now in daily use in the shop and, conservatively speaking, are worth several thousand dollars, have been built by student machinists. A sixteen-inch lathe with an



REPAIRING AN AUTOMOBILE

eight-foot bed and a turret, worth \$500, was built by Negro and Indian tradesmen. At present the machinists are working on a big, twenty-two-inch turret lathe which will be worth about \$1800 when it is finished.

Among the tools that have been made by the Hampton machinists for their own shop are three drill presses, a speed lathe, an emery grinding stand, polishing stands, a twist-drill grinder, and a number of special tools for doing the larger and



WORKING ON A THREE-TON AUTOMOBILE TRUCK



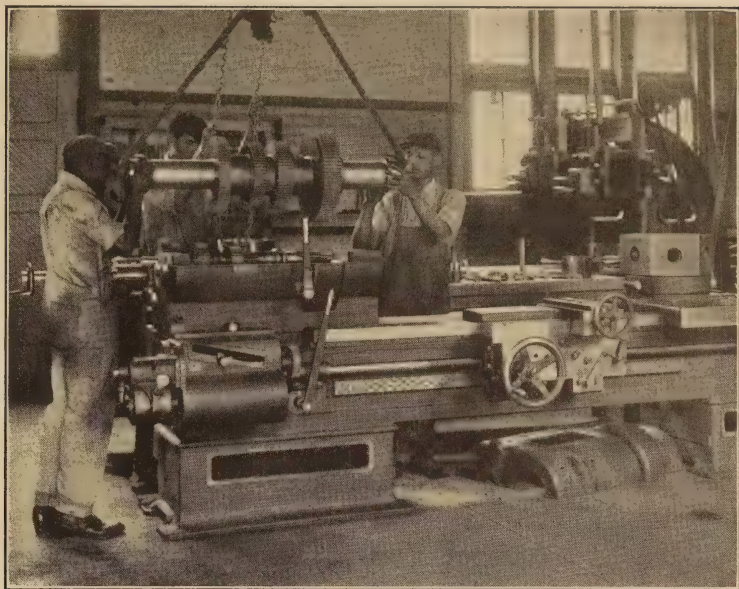
BORING PINION GEARS ON A HAMPTON-MADE LATHE

more complicated pieces of work. Model work is done for outsiders, especially for people working out inventions. The models are made from blueprints, wooden models, and sometimes from mere verbal directions.

For the Institute itself the machine shop has built and riveted together near the power house a large coal-hoisting frame. It has also done important repair work on machinery in daily use in the school's steam laundry, in the agricultural department, in the steam, electrical, and ice plants, and in the other Trade School shops. From time to time the machinists have made, on short notice, repairs requiring immediate and skilful attention. While the machinist tradesmen follow a given course of graduated instruction, there is some leeway because considerable attention is given to repair work which comes from the school departments and from people outside of the county in which Hampton is situated. Automobile and gas-engine repairs make up a large portion of the shop's commercial work.

The machine shop exercises may be roughly grouped as follows : Filing to line or gauge ; chipping and filing ; bolting pieces together ; hand-tool work ; use of calipers and bevel square ; handling small forgings ; shaper work ; turning ; use of milling machine and planer. In addition to a variety of repair and construction work, the four-year course includes the following :

Vise work—Instruction is given in laying out work to



STUDENTS BUILDING A BIG TURRET LATHE

drawings and in the proper use and care of tools such as the chisel, square, file, scraper, and hack saw. Exercises include cape chiseling, roughing out with file, filing to a line, draw filing, finishing, squaring up, polishing with file and emery cloth, hack-sawing, bolt threading, nut tapping, scraping, plane-surface filing, riveting, keyway cutting, tool-making (as dividers and calipers). Each student is given some instruction in forging chisels, lathe and planer tools, annealing, and tempering.

Speed lathe work—This includes small drilling, tapping, knurling, filing, and polishing. Instruction is given in hand-tool work, such as small screws, thumb nuts, binder posts, and handles.

Drill press work—This includes drilling to given depths, blocking out with drill, center drilling, countersinking, and counterboring.

Shaper and planer work—Instruction is given in cutting off work, planing to dimensions, squaring, inside work, bevel planing, inside keyway, planing T slots, and work requiring the use of the surface gauge.

Lathe work—This includes the proper use of the lathe, straight cutting, shoulder cutting, tapers, eccentrics, chuck and faceplate work, cutting threads (inside and outside), use of boring bar, polishing, and use of center rest.

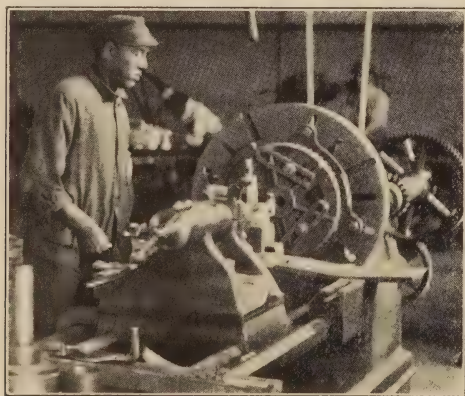
Milling-machine work—This includes the cutting of racks, spurs, worms, bevels, and miter-gears; the milling of reamers, taps, and cutters; and key seating.

The mechanical drawing that the machinists receive, during six forty-minute periods a week throughout three years of the course, bears directly on their trade. For example, they worked out complete sets of detail drawings of "The Hampton Institute Gear" from the original drawings made on a large sheet by the inventor. Then, too, near the close of the year, after making their mechanical drawings they come down into the shop and work them out. All the regular shop exercises are done from blueprints. Other work may occasionally be done from sketches or specific directions.

The first hour on Saturday morning is spent by the Trade School instructors in giving the students helpful shop talks or in conducting demonstrations to drive home and clinch important facts and principles. Some of the subjects covered in these talks are the handling of machine tools and ways of using them; gearing up when the index is lost; lathe tools; speed of lathes; wheel work; steam pumps; hydraulic rams; taper work; and the screw-thread calculator. Instruction is also given in shop mathematics, in the principles of mechanics, in bookkeeping and business law.

The fourth-year schedule of the trade course for machinists and for all Hampton tradesmen is as follows: Algebra, 4 periods of forty minutes each; economics and sociology, 4; general history, 4; English, 4; literature, 4; military drill and gymnastics, 3; shop practice, 24; psychology, 4; singing, 2; and study, 21.

The work done by these machinists is well worth doing. It is not simply contrived to keep boys busy. It stands for accuracy, skill, and thoroughness. It deals with real problems in the school's daily industrial life. It helps to connect Hampton with a wider public that ordinarily knows little about the



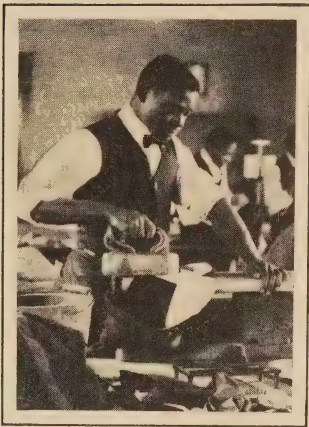
BORING GEARS FOR AN ALUMINUM PLANT
IN THE SOUTH

possibilities of carefully and wisely trained Negro and Indian youth. It fits in admirably with the Hampton idea of education—education that finds its goal in service and character building.

Hampton machinists, together with their comrades in the other shops, demonstrate every day the truth of General Armstrong's ringing words: "Subtract hard work from life, and in a few months it will have all gone to pieces. Labor, next to the grace of God in the heart, is the greatest promoter of morality, the greatest power for civilization."

THE HAMPTON INSTITUTE TRADE SCHOOL *

V TAILORING



FIVE HUNDRED Negro and Indian boys—alert, trim cadets—drawn up in six companies for battalion inspection on a bright Sunday morning, present a picture that shows effectively the value of teaching tailoring in the Hampton Institute Trade School, for all the well-fitting uniforms are made and kept in repair by student tradesmen. If the *test by results* is applied to Hampton's tailoring department, then it is evident that Negro boys have learned to sew, to draft, and to cut clothes with accuracy and skill.

This excellent result is not secured, of course, through any hit-and-miss method of instruction. Special emphasis is placed on careful supervision of the student in training, to the end that he may gain in power and develop in character as he takes up each new day's work. In the tailoring department, for example, this educational principle means that a boy must learn how to sew by hand satisfactorily before he attempts to use a machine; he must master drill work in the essentials of his trade before he attempts to make a pair of trousers or a coat; he must show, through his daily work, that he possesses accuracy and skill before he is allowed to undertake new and more difficult problems.

Under the watchful eye of careful instructors, who are themselves expert tailors, the Hampton tradesmen acquire, through well-graded and rigorous training, the art of making well-made, well-fashioned clothes. The *how* and the *why* of the art go hand in hand. The boy who shows unusual ability passes through his routine technical work faster than the ordinary or

* "Carpentry and Cabinetmaking," May 1913; "Blacksmithing and Wheelwrighting," January 1914; "Bricklaying and Plastering," April 1914; "Machine Work," January 1915

slow boy. Nevertheless, he is not allowed, on account of any budding genius, to skip or shirk certain irksome exercises, given for the sake of laying a good foundation, on the assumption that he can get along without the regular drill work.

Students receive new work after they satisfactorily finish the tasks that have already been assigned to them. Careful work here spells progress. There is, of course, a natural incentive to the boys to do all their work, even from the early exercises, just as well as they possibly can; namely, the desire to get to something which they feel represents *real* tailoring. It is therefore possible for the instructors in tailoring to be very exacting in their requirements—and they are.

By what stages, then, is a boy taken through his trade course in tailoring? What tasks are assigned to train the boy's eyes and fingers, his judgment, his power of initiative, his sense of responsibility, his latent capacities? What finally becomes of the Hampton-trained tailor? These questions are fair ones. Brief answers to them will at least suggest the significance of Hampton's work in training tailors for better citizenship.

On entering the tailor shop a boy is given a needle, a thimble, and a spool of thread—important if not imposing tools which he must learn to master. He is then shown how to sit on the table in true tailor fashion. The common observer scarcely realizes that the tailor in his crouched position has any opportunity for comfortable shifting. The modern tailor, however, finds it possible to sit on his table in such a way that he may find a suitable rest for his work and still enjoy the advantage of being able to relieve the strain of continued sitting.

The tailor shop is bright, airy, and clean. A boy in training lives in an atmosphere of order and cleanliness. He receives through his senses lasting impressions of what a tailor shop should be.

After a tailor has learned how to sit on the table properly and how to thread his needle, his first exercise is plain, straight, hand sewing. He learns to sew straight, without a guide, on a piece of cloth or lining. Row after row he sews with an increasing degree of uniformity. Perhaps few who have not tried to do this task can realize how difficult it is for an untrained boy to make the first row of basting which is to serve as a guide for many another row. Hands grown big and strong, and perhaps worked into awkward shape through years of hard labor, do not at once lend themselves to the holding and manipulating of a little needle. Here determination and patience enter to help the ambitious boy overcome his difficulties in acquiring a new art.

Step by step the tailor passes from sewing straight, parallel rows to turning an edge on a plain piece of cloth and then felling



“THE WELL-FITTING UNIFORMS ARE MADE AND KEPT IN REPAIR BY STUDENT TAILORS.”



“THE SCHOOL TAILOR SHOP IS BRIGHT, AIRY, AND CLEAN.”

it down. He learns to make the common stitches, and the length of time required to master the running stitch, the cross stitch, the back stitch, and the fell stitch depends entirely on the boy's skill and neatness. Until work is done well it must be repeated. After long, hard practice the young tailor is able to turn a hem without basting it. Slipshod work is not allowed to pass. The criticism which seems perhaps so severe today becomes the reason for better work tomorrow.

Learning by patching is a live educational principle in the Hampton tailoring department. How to make neatly and by hand a round, a square, and a triangular patch paves the way to a most practical form of work. On Monday of every week the tailor shop receives student uniforms for miscellaneous repairs. This so-called missionary work is given chiefly to the first-year boys and affords them an opportunity to learn how to meet emergencies. Before a boy is allowed, however, to put a needle or shears into a pair of trousers or a coat needing attention, he must explain definitely to an instructor how the garment should be repaired. The boy who is particularly weak on a certain kind of work is given, out of this miscellaneous repairing, just the tasks that he needs to perform in order to correct his weakness.

In the patching of clothes the tailor, after his preliminary work in hand sewing, receives a wholesome introduction to the problems which will face him in his everyday life. The boy who can make a good patch, time after time, usually gives promise of



HOW TO LAY OUT AND CUT GOODS ECONOMICALLY IS DRIVEN HOME
THROUGH CONTINUAL PRACTICE.

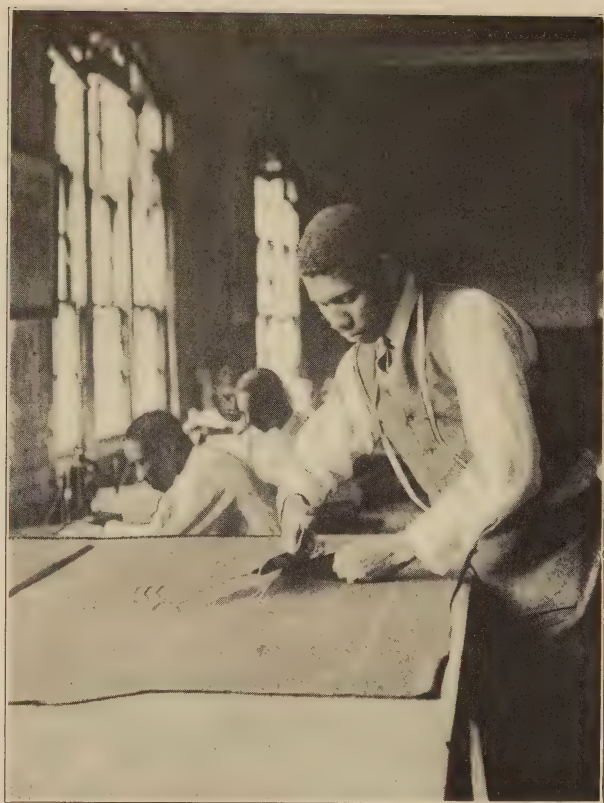
becoming a very good tailor. This missionary work is all done without cost to the students. It gives the boys in the tailor shop valuable experience. Other repair work which is done in the Trade School for students, or for Hampton workers, is paid for.

The making of good buttonholes and the padding of collars receive careful attention. The student's work is checked up systematically and is most carefully supervised. The aim is to give correct methods of attacking and completing the problems of the trade.

The machine work in the tailor shop corresponds in character to that of the hand work. The boy takes a square piece of cloth and at first sews in a straight line. Then he makes a circle, using his eye as a guide. He sews one circle within another and then another until he is able to guide the sewing to a nicety. The test again is that of accuracy. While other elements also enter into the judgment which is passed on the apprentice, there is always the essential test of accuracy.

Following this purely technical work there comes an interesting series of exercises in the making of pockets—vest pockets, trousers' pockets, pockets with flaps, pockets without flaps, and others that only a tailor himself can properly name and classify.

The first machine work which the student commonly thinks of as real tailoring is the making of overalls, and these are sold to students in the Trade School or in other departments.



LEARNING HOW TO CUT UNIFORM TROUSERS

The aprons and white coats for the boys who work in the school kitchens, and overall jackets are made by the Hampton tailors in the early part of the first year of their course. This work furnishes the student tailor with his first experience in assembling garments. The sewing of uniform trousers, which have already been cut out in stock sizes, also falls to the lot of the first-year tailors.

It must be clear from all that has been said that Hampton places a good deal of emphasis on teaching tailors how to sew correctly and skilfully before turning them loose on drafting and cutting. Experience has shown, throughout the tailoring trade, that men who have first learned how to sew well will, when they come to drafting, see more clearly what shifts need to be made in their pattern in order to secure a good fit in the finished coat or suit.

After the apprentice has learned how to sew uniform trousers correctly, he learns how to draft and cut them. He is shown how to take the measurements and how to apply them to his drafting. Here he learns how to handle the tailor's scale

and receives training in pattern drafting which is analogous to the instruction in mechanical drawing which other tradesmen receive.

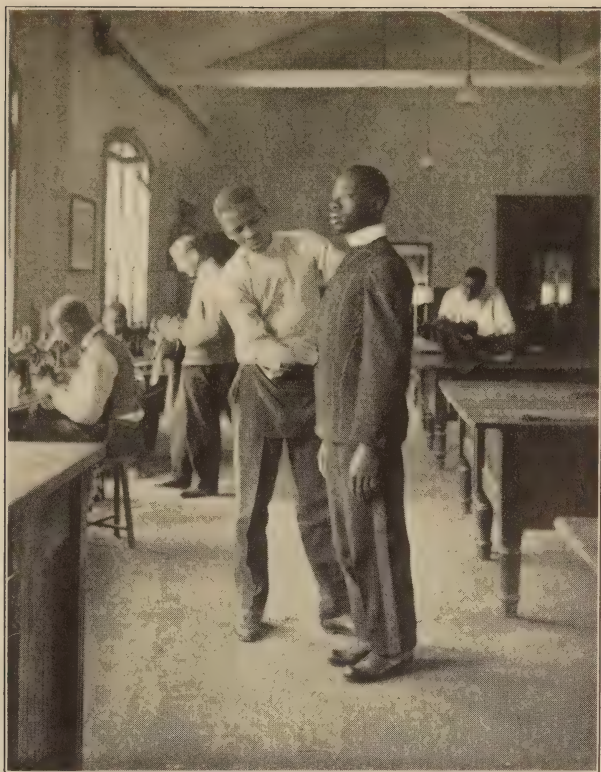
The first year of the tailoring course, therefore, includes a variety of work that is assigned for the purpose of drilling the Negro or Indian boy in the essentials of his trade. This first year, however, is not one long period of monotonous drudgery. In it there comes to the student tailor the opportunity of doing work which the outside world regards as real tailoring. He does common tasks, but he does them with intelligence and with respect for himself as a tradesman. He sees with his own eyes how his work compares with that of other boys who receive the same careful attention and instruction. He finds himself in his everyday work. He has a chance to receive from his academic studies new light on books and on life itself.

While the first-year tailors are doing their preliminary work in hand sewing, the second-year boys do the miscellaneous repair work on uniforms. At the beginning of school in the fall many of the student uniforms need new body lining, new sleeve lining, new collars, and other repairs, including cleaning and pressing. All this work is paid for by the students themselves.

The bulk of the uniforms for the Hampton battalion, especially for the entering class of boys, is made up in stock sizes during three or four months. Work on so-called citizen's clothes



PADDING CANVAS FOR A COAT



“HE IS TAUGHT HOW TO HANG SLEEVES WELL
AND MAKE GOOD SHOULDER LINES.”

is carried on chiefly in the early spring. There is, however, a good deal of this non-uniform or citizen work done throughout the whole year. During the second year of his course the Hampton tailor gets additional practice in making up uniform trousers. He learns how to fit stock suits and receives additional instruction in drafting. He takes the necessary measurements, then cuts and makes the trousers. How to lay out patterns and cut goods economically are lessons driven home through continual practice.

When a second-year boy begins to work on a pair of uniform trousers he is taught how to do his work from start to finish. He also begins in this year on uniform coat-making. He is taught how to hang sleeves well, how to make good shoulder lines, and how to put on a collar correctly. These are the principal points in good coat-making. The cloth for the uniforms is shrunk before it is made up into suits. The students do not attempt to shrink goods in bulk, but they do receive some practice in shrinking small lots of cloth.

The fact that some of the Hampton boys are somewhat irregular in their build makes it possible for the third-year tailors to receive valuable experience in making uniforms on special orders. From fitting uniform coats the tradesman in this year passes to the making of citizens' suits. Here the student has the opportunity of making a citizen's suit for himself. That he wishes to make a suit of the latest cut is not at all strange. Why should any man learn how to make clothes if he cannot enjoy the opportunity of wearing clothes of fashionable cut? In the art work which Hampton offers, the student has an opportunity of finding out what color combinations are considered artistic, and therefore it is possible for the tailor to make for himself a suit that is fashionable and at the same time harmonious in color.

Week by week the tailors receive helpful talks concerning the kinds of material given them to work with—canvas, hair-cloth, linings, cotton and woolen goods. They are shown methods of judging the quality of goods by the texture of the fiber, and they are taught how to know whether materials are all wool, or part cotton and wool. Information is also given as to the cost of starting a business, methods of buying, some idea as to the quantity and grades of material and linings for suits of different prices.

For twenty years Hampton has been sending out into the South a band of well-trained tailors—men who have not only been able to make good clothes, but also have been able to help their communities in church and Sunday-school work, the management of boys' clubs, and the improvement of civic conditions. Today one finds in positions of responsibility and trust Hampton-trained tailors who, on account of their rigorous years of apprenticeship, have learned how to use their native powers and to work helpfully with their fellow-men.

Whether as journeymen or as proprietors, the tailors who have gone out from the school have done on the whole uncommonly well. That the South offers young Negroes an opportunity to succeed in the tailoring business is clear from the fact that many of the Hampton tradesmen have received, without difficulty and without prejudice, the patronage of some of the very best Southern white people. Hampton has succeeded in the tailoring department in training men who can not only make their fellows outwardly more attractive but also better in character.



RUNNING HOT AND COLD MAINS AND STEAM LINES

THE HAMPTON INSTITUTE* TRADE SCHOOL

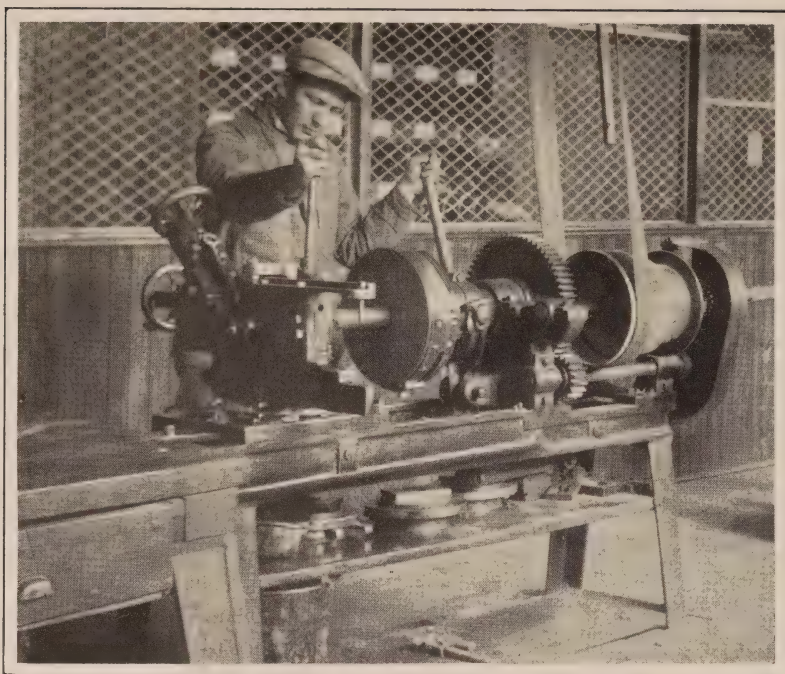
VI PLUMBING AND STEAMFITTING

“Subtract hard work from life, and in a few months it will have gone all to pieces. Labor, next to the grace of God in the heart, is the greatest promoter of morality, the greatest power for civilization.”

Samuel Chapman Armstrong

LONG have the plumber and his proverbial helper been the butt of the joke-maker—a jolly, irresponsible laugh-provoker and critic of life, who with graphic word pictures and skilled use of the sketching pen or pencil has overemphasized, without offering a single corrective, the shortcomings of *some* plumbers. Exorbitant charges for services rendered, wasted hours billed to fuming customers at the same rate as productive hours, general indifference and inefficiency,—these shortcomings, characteristic of some plumbers, have been so thoroughly reported and exploited that good plumbers and, indeed, good steamfitters, are under the ban until they clearly prove their public worth.

* Other articles on the Hampton Trade School have appeared as follows: Carpentry and Cabinetmaking, May 1913; Blacksmithing and Wheelwrighting, January 1914; Bricklaying and Plastering, April 1914; Machine Work, January 1915; and Tailoring, April 1915.



CUTTING PIPE THREADS

The aim of the Hampton Institute Trade School, in training a limited number of carefully selected, ambitious Negro and Indian boys as plumbers and steamfitters (or mechanics who can do both good plumbing and good steamfitting work) is to turn out at the end of a four-year course reliable and efficient men—men whose characters have been developed, strengthened, refined ; men who can tackle hard problems and work them out successfully to a finish; men who love their work, even though so much of it is out of human sight and is not subject to the immediate criticism of every passer-by. Hampton, in short, makes men, as well as mechanics whom the public respects rather than ridicules.

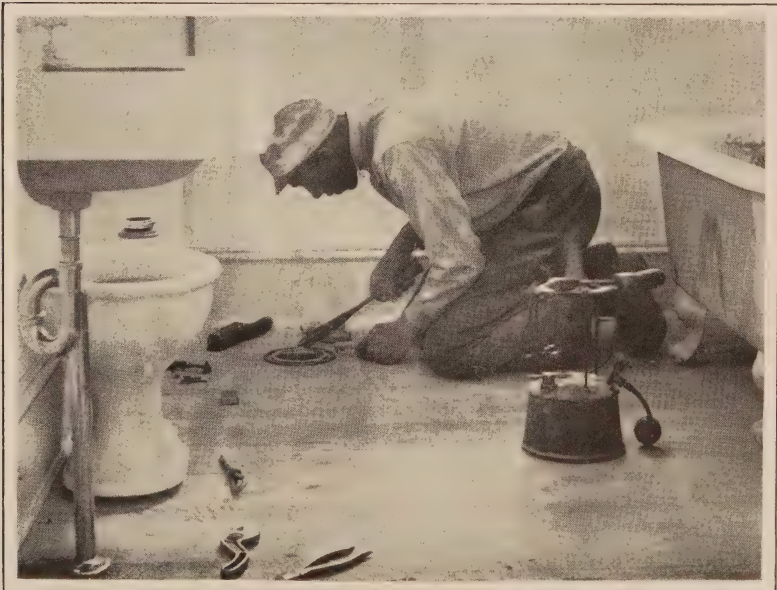
“ Where goes sanitary plumbing, there goes civilization. ” These words, expressing both a fact and a prophecy, might well appear as a motto over the door of the plumbing and steamfitting department. They express ideas which are carried into everyday practice by those who teach and those who learn. Health officers are proclaiming a doctrine which men and women are slowly heeding: “ Public health is purchasable. Within natural limitations a community can determine its own death rate. ” The competent plumber and steamfitter, who understands his responsibility to the public for maintaining excellent community health, is a valuable asset and an active coöperator with public-health officers or

sanitarians. The calling of the plumber, despite its disagreeable work, is one worthy of the best men. It touches vitally all human life. Where properly followed, it brings new life and new joy to the community. Here, then, is the thought underlying Hampton's work.

From city and town there come to Hampton intelligent Negro and Indian boys, who, after careful choosing and planning, enter the plumbing and steamfitting department, there to work inconspicuously and faithfully, early and late, in damp trenches or on hot roofs, in underground passages or at dizzy heights.

Some of these boys have already dabbled with machinery or puttered around some plumber's shop. All are "green" so far as scientific plumbing and steamfitting are concerned. All need systematic and hard training. All are put through the mill of regular work under careful supervision. Boys who come to the Hampton Trade School have a purpose. Some know technically, at the beginning, almost nothing about the trade which they are undertaking to master. In plumbing and steamfitting, for example, the new boys come with an earnest desire to learn how to lay pipes and do the thousand and one thought-compelling tasks which find their way to a practical mechanic.

While some boys learn a great deal of their shop arithmetic from pipes, valves, plumbing fixtures, radiators, and working drawings, still all who begin their trade work in plumbing and



"HE MAY SET A BATH TUB OR INSTALL A WHOLE BATHROOM OUTFIT"

steamfitting, or in any other branch of the Hampton Institute Trade School, must first reach a satisfactory and required academic standing.

Dr. Charles A. Prosser wisely said in a recent Hampton Institute address: "Industrial schools are not intended for the so-called 'lame ducks' but for good, red-blooded, ambitious young people." Hampton has found that this doctrine is sound in theory and practice. In plumbing and steamfitting, for example, the boys who have been poor in their regular academic work have usually been correspondingly poor in their trade work. Students who are weak on the academic side may get along fairly well, through faithful persistence, where there is merely mechanical work to be performed, but when they come to problems requiring the use of judgment, then their poor academic equipment becomes a real hindrance to progress.

To teach Negro and Indian boys *practical* plumbing and steamfitting, as well as the necessary theory, is the specific aim toward which everything else in the course leads. Practice, practice, practice—this is the recurring watchword.

When a "green boy," one who, for example, has grown up in the back country—"in the sticks"—away from the conveniences of modern life, such as piped running water, hot and cold water for bathing, sanitary toilets, and tile drainage, enters the plumbing and steamfitting department, he is assigned a twofold job: keeping the shop, tools, and general equipment thoroughly cleaned up and helping an older boy to take care of and handle steam pumps, skim grease traps, and make minor plumbing and steam repairs. Meanwhile, he is expected to learn the names of the common tools and materials which the plumber and steamfitter must constantly handle. He is shuttled from one practical job to another and is required to work effectively with students of somewhat wider experience and deeper knowledge. He receives for his work, at this stage of his training, five cents an hour, provided he shows judgment in what he does, or leaves undone, and performs his tasks well and faithfully.

More and more responsibility is put upon the student tradesman. As he shows, through his daily work, that he can carry well his added burdens, he is given new and more difficult problems to solve, not in the classroom or shop alone, but right on the job itself. Then, too, later in the course, he is given the opportunity of helping to guide and direct those who are even less experienced than he is.

Hampton believes thoroughly in foresightedness. The general plumbing inspection of the boys' dormitories, for example, is conducted by second-year tradesmen, who also make the necessary repairs. Further, these students look after the steam radiators,

making minor adjustments and repairs. Thus it is clear that the second-year plumber-steamfitter is given more latitude. He is also oftener allowed to work alone. He is still, however, in a measure, a helper to the boy who has gone further along in his trade. All the work of the student plumbers and steamfitters, like that of other Hampton tradesmen, is systematically checked up and carefully supervised. Hampton's physical plant is too extensive and valuable to do otherwise.



PACKING A JOINT IN A STEAM PUMP

When a tradesman reaches his final year, he is given just as much responsibility as he can safely carry. He is given problems the solution of which require that he shall exercise initiative, responsibility, accuracy, earnestness, and, above all, good common sense. He is, for example, assigned some interesting and difficult work, and, with the help of younger boys, is expected to finish it satisfactorily and according to given specifications. He may set a bath tub or install a whole bathroom outfit.

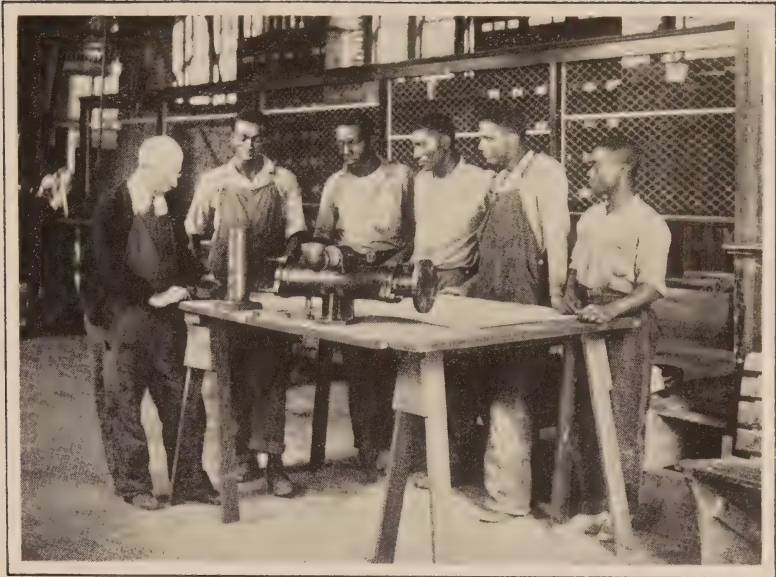
He usually works from sketches which have been carefully gone over in consultation with the head of the department. He may, at another time, be dispatched to figure, from a builder's blueprint, the wall space in a building, for the purpose of finding out how much heating or radiation surface will be required per room, to maintain, under varying weather conditions, a given, minimum, inside temperature.

While the Hampton plumbers and steamfitters use no assigned textbook, they are nevertheless encouraged to read in their spare time, which at best is very short, the leading trade journals. They consult the standard handbooks used by builders. They must become familiar with the essentials of the building art. The instructor also calls attention, from time to time, to special articles with which Hampton-trained mechanics should become familiar.

The shop arithmetic is given, not as a hard-and-fast series of problems or drills, but rather as individual problems in connection with specific work, which must be completely and promptly done in accordance with standard practice. An attempt is made, not only to give individual students command of the mathematics involved in dealing, for example, with solids, cylinders, tanks, pressure, and temperature, but also to develop students along the line of their greatest talent. Here is applied, in a simple and practical fashion, the educational doctrine of appeal to interest.

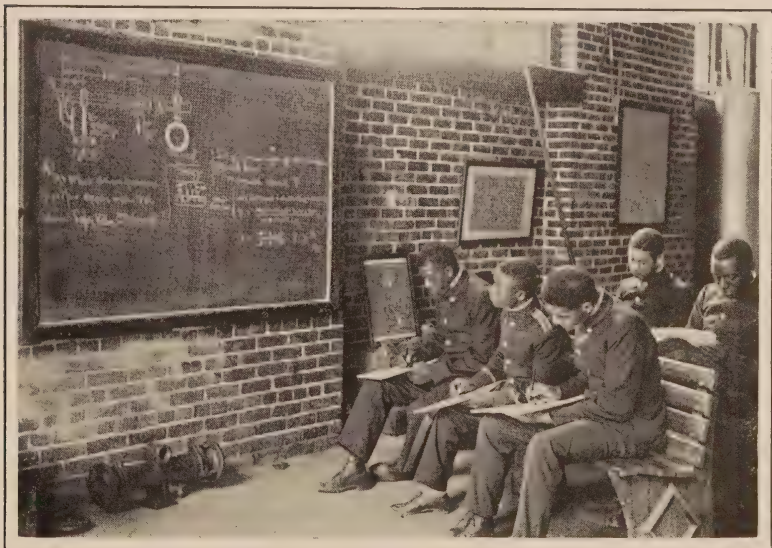
The regular Saturday morning shop talks open the way, not for mere technical lectures, but rather for interesting demonstrations by students and instructor, as well as for the thrashing out of live, everyday problems by the question-and-answer method. Students thus receive some grounding in the theory and practice involved in the construction and handling of safety valves, pumps, boilers, radiators, piping of various materials and patterns, as well as in a wide range of commonly used plumbing fixtures. Here, too, students have an opportunity of finding out how intimately plumbing and steamfitting are related to other branches of construction work. They learn something of the importance of sanitary plumbing to good health, public and individual. They catch a vision of what society expects and even demands of an up-to-the-minute, well-trained plumber and steamfitter, regardless of race, color, or creed.

Here, again, in the Saturday shop talks, the instructor is able, in a peculiarly effective manner, to drive home and clinch, for the benefit of all the tradesmen in his department, the essentials of modern mechanics and practical problems which he has been striving daily to impart to single students while they were working on more or less individual problems.



"STUDENTS LEARN TO WORK FROM SKETCHES."

Hampton's fire outfit, which includes steam and chemical engines, fresh and salt-water fire lines, valves, and pumps, is systematically inspected and repaired by the plumbing and steam-fitting boys. During the regulation fire drills these tradesmen



"SHOP TALKS OPEN THE WAY FOR COMBINING THEORY AND PRACTICE."

are very busy. In cases of actual fire they have been most useful and efficient.

The Hampton course in plumbing and steamfitting is outlined as follows in the current school catalogue:—

“This course comprises instruction and practice in all the piping and connections necessary for the heating of buildings, connecting of engines, boilers, and water-supply mains, both wrought and cast iron.

“Under plumbing are included sanitary drainage; laying, grading, and calking cast-iron and terra-cotta soil pipes; fitting up bathrooms, kitchens, and laundries; and general house plumbing.

“A limited amount of steam-engine and boiler practice is included. As opportunity occurs, an abridged course in machine-shop work and blacksmithing will be given, which will have special reference to the needs of steamfitting and steam-engine work.”

By what results does Hampton prove that this excellent course is workable? Let facts tell the story.

James Hall, the new, fireproof, four-story boys' dormitory at Hampton Institute, is well under way. It will represent when completed an outlay of nearly one hundred thousand dollars. The work of the student plumbers and steamfitters on this modern, high-grade structure includes practically every kind of task which falls to the lot of the competent journeyman plumber and steamfitter; namely, running sewer lines, hot- and cold-water mains, and steam lines; setting the supplying and wasting fixtures; making a ninety-hour, hydraulic test for drainage; excavating and backfilling in connection with the installation of the plumbing work; using, in sewer work, salt-glazed, cement-joint, tile pipes; placing extra heavy, cast-iron, running housetraps with clean-outs; using heavy, cast-iron and galvanized wrought-iron pipes; packing joints with oakum and molten lead; laying horizontal lines with a uniform fall; placing clean-outs on horizontal and vertical stacks; covering hot-water pipes with wool felt, and cold-water pipes with asbestos, air-cell covering; placing fire valves and drain valves; wiping joint connections between brass ferrules and lead waste pipes; placing, for the leader downspouts, cast-iron traps with cleanout screw plugs; connecting the school's cold-water system with all the dormitory fixtures, including the hose and fire outlets; supplying hot water to wash basins, bathtubs, slop sinks, and showers; testing and adjusting radiator connections; and laying “straight, true, round pipe, without interior obstructions, with sharp full-cut threads . . . in the best workmanlike manner.”

The wholesome effect of hard and carefully supervised work on the characters of hundreds of Negro and Indian boys, who

have faithfully undergone the trying Hampton test, is the best possible human proof that industrial education, combined with the idea of education for service, does make possible the development of Christian manhood, as well as the construction by student tradesmen of attractive and useful buildings.

The farm hand, the newsboy, the drug-store porter, the stable hostler, the bellboy, the waiter—all these types and many others have come under the influence of the Hampton Institute Trade School course in plumbing and steamfitting. They have gone out to serve their people faithfully in the South and West. They have gone forth, not only as apostles of industrial education, but also as messengers who have carried the gospel of better homes, schools, and churches, the gospel of a new and richer life for backward classes and communities. They have carried the torch of Hampton to light up the way for those who need religion and education in their everyday life. They have lived, indeed, so that thousands upon thousands of Negroes and Indians may have life and may have that life more abundantly.



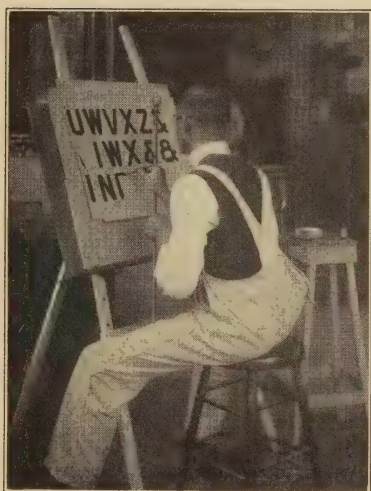
"HAMPTON'S FIRE OUTFIT IS SYSTEMATICALLY INSPECTED AND REPAIRED."

THE HAMPTON INSTITUTE TRADE SCHOOL *

VII PAINTING

"Man making is first, money making is second. But the skill and the drill that make money may be good for men."

—SAMUEL CHAPMAN ARMSTRONG



LITERALLY thousands upon thousands of dwellings and outbuildings throughout the land are rotting for lack of paint. Men and women have not yet fully realized that when paint is thoroughly, skillfully, and tastefully applied to their buildings they have made a real contribution to the economic and social welfare of their community. Not only in the South and West, but throughout the country, people need to realize that a white-wash broom and a kit of three paint brushes, costing \$2.50, are useful instruments in obtaining real public-health protection.

Negro and Indian youth have at Hampton a wonderful opportunity to take up painting, not only as a commercially profitable occupation, but also as a medium for genuine social service.

Too many of these young people have to learn that painting is a relatively healthful occupation and one which offers work during the whole year at a good wage to steady, sober, skilled mechanics. The dread of lead poisoning, so general a few years ago, is fading away. With the decrease in the use of powdered pigments and the increase in attention to clean habits of working and living, there is no longer a valid objection to painting as a risky occupation. Men have also come to realize that the use of

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MATCHING TINTS

liquor has more to do with decreasing their efficiency and earning power than the natural hazards of such a trade as painting. Painters, like all other workers, are becoming as a group more sober, efficient, and reliable.

Hampton Institute offers a four-year course in painting. It aims to turn out practical painters with a background of useful knowledge and a vision of what a good mechanic can do as a community leader. Here is a partial list of the work done by the Hampton painters during a typical year:—

Twenty-eight buildings painted on the outside; sixteen painted inside ; sixty roofs; twenty-six porch floors, and eighty-six rooms painted ; 200 floors, waxed, varnished, or painted; five gates and fences, nine boats and launches, 275 screens, four fire sets, one hundred thirty-eight signs painted; sixteen carriages, carts, and wagons, and thirteen automobiles painted; forty-eight trays enamelled ; four hundred ten pieces of furniture painted, stained, and varnished; 180 radiators bronzed; fifty-three rooms papered.

Were one skeptical of securing good results from student tradesmen, here is first-class evidence that Hampton is attacking effectively the problem of taking Negro and Indian boys fresh from country or city, and training them for useful citizenship. How are these excellent results secured?

The Trade School work in painting includes three main divisions—technical instruction; carriage, wagon, and automobile painting; and house painting. The boys are given tasks of graduated difficulty and combine theory with practice.



A LESSON ON RAW MATERIALS

In the technical training they are taught the names and uses of their tools. They learn to match colors. They study the quality of the materials they use. They are shown, for example, why linseed oil is better than cotton-seed oil in painting.

They have practical shop talks on paints, leads, and other materials with which the general painter must deal. During these talks the instructor tells interesting facts about people who produce the raw materials of the trade. The students take notes and reproduce them orally and in writing.

When a student knows that the burning of one ship at sea, with its cargo of one hundred thousand cases of shellac from India, causes a decided change in the market price of shellac, he is bound to have greater interest in and sympathy for the people who gather raw materials for his use.

In the technical shop students take up sign painting. They begin with the making of simple Egyptian letters, by degrees developing skill and doing more difficult work. They learn the principles of good letter formation and spacing. They devote about one day a week for three years to sign painting.

The technical instruction in paper hanging is supplemented by practical work. The boys learn how to handle themselves, as well as how to handle paper and paste. They are taught to work correctly and neatly. About ten per cent of their time is devoted to technical work in paper hanging.

After the student has learned the names of the common

tools and knows how to match colors, he is given work in plain painting. It is his business then to learn the technical names of the different parts of doors, windows, cornices, and rooms. He must be able to interpret his plans and specifications.

Other technical work includes graining, kalsomining, stenciling, and frescoing. Hampton students make interesting experiments in the wearing powers of paints, varnishes, and other covering materials. On one occasion they were given fifteen different varnishes to varnish sections of the floor. They afterwards took full notes on the wearing qualities of these different varnishes.

Hampton places strong emphasis on having students know the reasons why trade operations are performed. While the school thinks it important for students to learn thoroughly how to do technical work, it does not stop there, but teaches them to put into practice on full-scale work all they have learned in the technical shop.

In the carriage shop the student cleans vehicles, sandpapers furniture, leads and prepares surfaces for painting. Next he learns to color and rub varnish. Meanwhile he receives experience in mixing paints. He is told why certain processes are followed. This same method applies to striping, lettering, varnishing, and finishing work.

There is a growing field of opportunity for Hampton-trained men who can do good automobile painting. Students have



LINING AND STENCILING



WAGON PAINTING

experience in removing old paint, priming, putting on rough stuff, and finishing. This automobile work is done principally by second-year students.

There is one advantage that a boy enjoys at Hampton—an advantage which he does not usually have elsewhere. He is *taught* every step of the trade. Under ordinary circumstances, if a boy goes into a commercial carriage-painting shop, he is assigned work in sandpapering, or leading, or rough painting. If he proves himself a good workman, he is usually kept at one line of work. If he advances at all, it is because he has closely watched somebody else, and is brave enough to imitate his more fortunate neighbor.

A boy receives at Hampton enough training in automobile, wagon, and carriage painting, during his trade course, to earn a living in this one branch of painting. In addition he is able to do good house painting and interior work. At present Negroes who can do satisfactory wagon or carriage painting can earn in the South from fifteen to eighteen dollars a week. It is also true in the South that there is little prejudice against a colored man in the painting trade, if he is a good workman and has a high standard of living. An efficient painter can go into business with a blacksmith, or he can do sign painting, or he can work as a house painter. A good Negro or Indian painter, a man with skill and good character, does not find his race an insurmountable barrier.

The indoor and outdoor painting at Hampton are almost evenly divided. Students therefore enjoy the advantage of receiving

training in practically all branches of painting. Frequently they are taken to a room or building, and, after having the papering or painting problem stated to them in detail, are required to take the necessary measurements and present an estimate for the work. The student's estimate is carefully checked with one made by the instructor. In this way the boys become acquainted with the business side of their trade.

In house painting the students start their work by preparing surfaces—sandpapering, scraping, and removing varnish. They prepare new wood work for painting, mix colors, and care for shop tools and equipment. Later in the course the boys study the structure and grain of woods used in the building trades. They do plain work in all branches of the trade. Some work they do on contract and some on the piece system. The older boys help in the supervision of younger boys.

After learning in the technical shop the essentials of paper-hanging, boys work under the instructor in house painting. Papering here includes getting the walls ready, hanging the



FINISHING FURNITURE



HOUSE PAINTING

paper, estimating for the work, and learning to trim paper with shears, straight-edge, and trimmer.

Every paint that is in general use at Hampton is carefully tested. On one building five different kinds of white paint are being tested. Another house has on it three kinds of ready-mixed paint under inspection. Every six months this paint is carefully examined and a record kept of its wearing qualities.

Not only do the student painters perform practical tasks, and work according to trade rules, but also they learn by the laboratory method the chemistry of paints. They receive a general course in the composition and reactions of oxygen, hydrogen, acids, carbon, and water. They also take practical work covering pigments, vehicles, varnishes, putty, abrasives, brushes, sulphur, chlorine, and lead. The industrial chemistry course, covering two hours a day for half a year, aims to acquaint the student with the composition of raw materials as well as their source, extraction, and refinement.

Boys who are taking carpentry and agriculture spend half a day a week for half a term in learning the rudiments of painting. The work they do is all practical. The carpenters learn to apply paint of the right kind to structural work and to set glass rapidly and well. The agricultural students learn to make whitewash, paint machinery, and care for farm buildings and implements.

Trade and academic work are correlated. Students write or speak on topics with which they have become familiar. A partial list follows: Care of paint brushes; importance of white lead to painters; how to remove paint from hands and clothing;

how whitewash is made ; how to measure a room for wall paper ; how to make paste for hanging wall paper ; use of shellac in the home ; pleasing color schemes for small houses ; why painting pays.

Hampton painters do high-grade work. They have good materials to work with, and they are expected to produce satisfactory results. The large number of school buildings makes it possible for student tradesmen to receive a variety of experience in painting woodwork, brick, concrete and plaster, iron, steel, and other metals. Hampton trains painters and not simply men who just paint. "Man making is first," to quote General Armstrong again.

The Hampton-trained painter goes back to his community prepared to lead his people in the matter of better painting because he understands the harmony of colors, the formulas for mixing paints, and the possibility of making houses more attractive and healthful. He is in a position to be a real asset to any community. All that Hampton gives him he is fitted, by training and experience, to pass on to others.

The story of one Hampton boy who took the Hampton Trade School course in painting may be of interest. William Roscoe Davis received his trade certificate from Hampton in 1905 but remained until 1907, when he was graduated from the Academic Department. Then he turned southward and found employment at Claflin University at Orangeburg, S. C. He served there as an instructor in painting for three years. During his summer vacations he worked in Orangeburg and developed a reputation as a skilled and reliable mechanic. He was then asked to go to the State College in Orangeburg and organize a department of painting. For five years he has been at work there. He has been trying to lead a life that will be an example to his fellowmen. He has been carrying out Hampton's teachings in his daily work. He has shown ability and tact. He has carried out the motto of his class: "We reap to sow." He is a typical Hampton graduate.

THE HAMPTON INSTITUTE TRADE SCHOOL*

VIII PRINTING

"The idea of self-help can be carried out only by productive industries. Honestly giving value for value, labor becomes a stepping stone, a ladder, to education, to all higher things, to success, manhood, and character."

—*Samuel Chapman Armstrong*



THE modern master printer is certainly a well-trained man. He does not "just grow." He is a thinker, a planner, a refined product. He believes, among other things tested by results, that he has won a partial victory for his goods when the material bearing his press imprint does not go at once into the yawning proverbial wastebasket. He makes an honest effort to have his printing so attractive that even busy men and women will stop to read his announcement, his booklets, his magazines.

The last trench has been taken when he knows that his printing has been an instrument in helping to make the same busy people willing to support—financially, as well as morally, perhaps—some commercial venture or philanthropic cause which had been near his own heart. Here, then, is the final blending and testing of theory and practice.

What the master printer in the commercial field is struggling so persistently to achieve, the printing department of the Hampton Institute Trade School is daily accomplishing—and is then improving upon. Hampton has never been simply content to leave well enough alone. What has been the result of this policy of constant struggling? For nearly fifty years the school has been making steady progress. Today the injunction of its

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LEARNING HOW TO HANDLE TYPE

Principal, made to workers and students alike, is inspiring, "Let us go on to better things."

The Hampton printers not only touch every department of the school, but they also make possible the spreading of Hampton's message—education for service. A few specific cases follow:—

Whenever the Hampton Singers, now well-known from coast to coast for their plantation melodies—the "spirituals" of the Old South—go into the field, with the motion-picture outfit and group of speakers, to create new interest in the school's method of training efficient, Christian leaders among Negroes and Indians, as well as to raise money for Hampton's growing work, the printing department coöperates in producing attractive invitations, programs, and booklets which will win the attention and hold the interest of possible friends of just ideas of education.

Whenever the Principal of Hampton wishes to reach the public with an editorial or report on the school's work, or needs, or progress, he prepares his material for the *Southern Workman*—Hampton's illustrated, monthly magazine—and then leaves the task of getting out an attractive production to the printers, who work in coöperation with the Publication Department.

Whenever colored rural teachers are to be reached with helpful information concerning manual training, club work for children or grown-up folks, cooking, sewing, homemaking, or community improvement methods, the Hampton-trained printers produce by the thousand "Hampton Leaflets," and thereby help to extend the school's influence for good, both for today and tomorrow, to sections in America and in foreign lands in which there is still need of reshaping public opinion in matters of practical education.

Whenever a call is to be issued for a Hampton Farmers' Conference, or a report of what successful farmers have been doing to promote racial good will through industry and thrift is to be spread abroad, the assistance of the printers is summoned, and the immediate result, which is new enthusiasm for farming based upon intelligence, always justifies the expenditure of the thought and money put into this kind of printing.

With an up-to-date equipment, careful supervision, and a fine spirit among the boys themselves, the Hampton Institute printing department is able to do good work in large quantities and often under considerable pressure.

The composing room, which is on the second floor of the Trade School Building directly over the pressroom, contains twelve modern, iron double frames and three iron job frames made by tradesmen in the machine shop; three iron composing stones also made by the machinists; a No. 2 Hacker Self-inking Proof Press of the latest design; labor-saving furniture; and a variety of modern faces of type for job work, as well as a fair quantity of plain or body type for newspaper, pamphlet, and magazine work in six- eight- ten- and eleven-point sizes.

The pressroom, which is well lighted and well heated, is so arranged that work can be carried on with few lost motions. A glance at the equipment makes clear to the practical printer that the Hampton printers have good, modern machines with which to work and for which they are made responsible in such matters as running, cleaning, and handling. There is no overhead shafting and there are no dangerous belts. Individual motors are used on



"MAKING UP AND CORRECTING PAGES, AND LOCKING UP JOB FORMS"

the presses, including a Chandler and Price, eight by twelve, a Golding, fifteen by twenty-one, a John Thompson "Laureat," fourteen by twenty-two, and a No. 7 Babcock "Optimus" cylinder; a No. 7 Boston wire stitcher, a Dexter Folder, magazine size, twenty-five by thirty-eight; a thirty-eight-inch Oswego Power Cutter; and a Standard Miller Saw, with routing and jig-saw attachments. Up to the present time it has not been deemed advisable to install type-setting machines in the Hampton print shop.

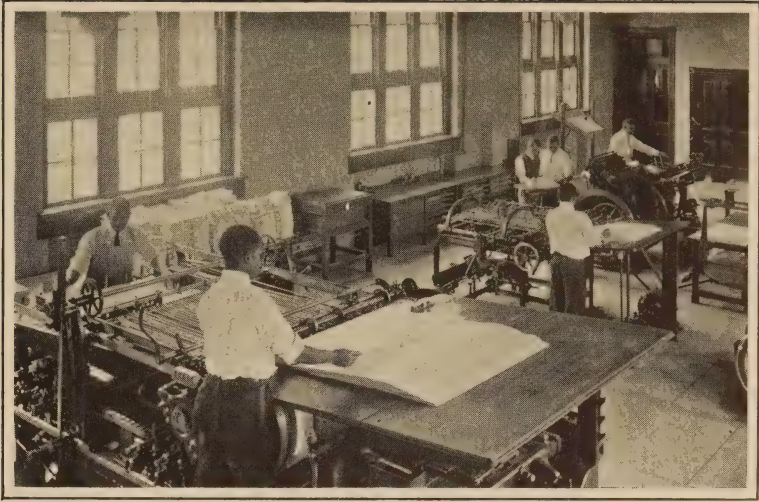
This modern printing plant and its daily output, of which Hampton is justly proud, represent the work of many years. There has been no attempt to introduce new machines for the mere sake of keeping up appearances or making a display to impress other trade schools. As new problems have come up for solution, an honest attempt has always been made, not only to solve the immediate problem, but also to take a step forward.

Those who have tried to do serious work day by day with young people receiving trade and academic training while doing some productive work, can realize how important has been the problem of careful supervision in the printing department, especially when the printed word, which represents a school or a commercial undertaking, makes or mars a desired effect.

Since the very early days of printing at Hampton Institute the students have been fortunate in having their work supervised carefully as well as sympathetically. Here again man-making has been even more important than mere trade-training. Today the aim of the supervision throughout the printing department is at least two-fold: to train students so that they will become practical printers—men who can face successfully the conditions which prevail in commercial shops; to cultivate in students a spirit of accuracy, cleanliness, and earnestness—the spirit which should dominate a master printer.

In teaching a trade, as in teaching anything else, the boy or the girl, as the case may be, is the all-important factor. Neither equipment nor supervision can count for much, if the boy does not care to learn or is not fitted to do the work assigned him. Hampton aims to make its printing course attractive and to prepare Negroes and Indians to do first-class printing.

When a boy enters upon the printing course, he receives instruction in the composing room in the names and uses of the common tools and materials which will form for four years a part of his daily life. He learns the position in the case of the boxes—elusive, small compartments—containing those mysterious metal characters which may give him more than one headache, back-ache, and even heartache, before he has mastered his so-called p's and q's. Let him who would mock the budding printer for his

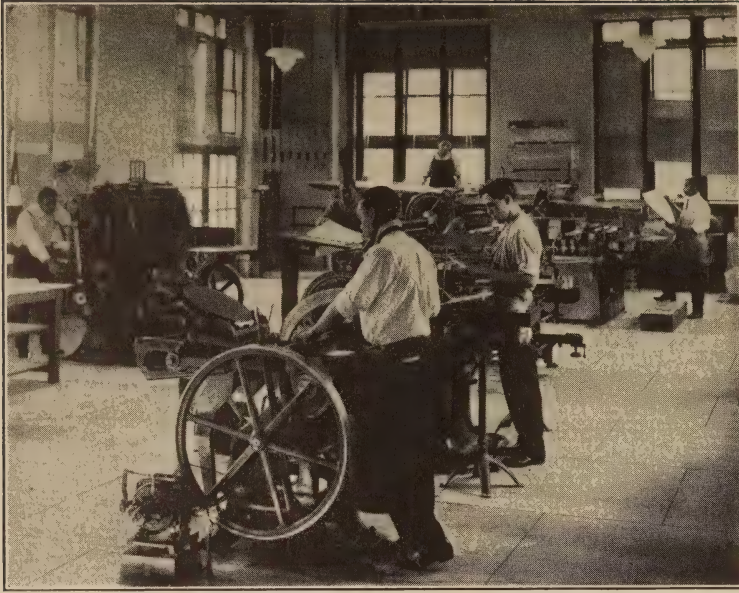


“HAMPTON PRINTERS HAVE GOOD, MODERN MACHINES”

foolish typographical errors, even in a corrected proof, try to set a stick of type after a “green” hand has done some distributing of type in his case! The composing stick, which the seasoned printer flirts about with the mere twist of the wrist, is an instrument of some uncertainty and torture to the new hand, who, between trying to find his metal characters and struggling to read his material upside down and wrong side to, is trying to make a good impression on some supervisor. Correct spacing and lining up of type are being learned, but not without some weariness of hand, arm, back, and foot.

After the boy has learned his case he is put on straight composition—newspaper, book, and magazine work—and masters some of the problems of spacing and justifying type, capitalizing and punctuating, paragraphing and proof-taking. This work requires usually one year and is followed by job work. The boy now learns how to handle types so as to arrange with taste, and according to specific direction, simple forms such as return addresses for envelopes, business and visiting cards, letter and bill heads. This work is followed for six months by more difficult composition—blanks requiring panels, tables, figure and rule work, box headings for blank books, title-pages, pamphlet covers, and such work as is commonly done in commercial printing shops. Then there comes for three months some interesting stone work—making up and correcting pages, as well as locking up job forms. The Hampton printers receive, in short, two years of profitable and interesting experience in composing-room work.

In the pressroom the newcomer receives his first lessons on



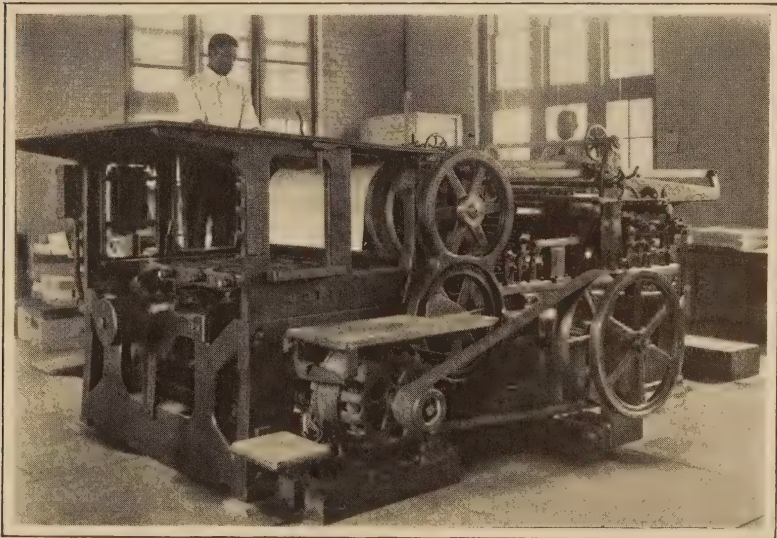
LEARNING TO OPERATE JOB PRESSES

an eight by twelve Chandler and Price press. He learns how to oil and operate this small press before trying himself out on something more ambitious. He learns how to make the press ready for printing and then runs envelopes, cards, small blanks, and a miscellaneous assortment of job work. Promotion again depends upon proficiency. If a boy makes good on that small press, he is advanced to the Golding press and tries his hand at running the covers of the Southern Workman, Hampton Bulletins, Leaflets, and other school documents; four-page forms; large blanks and placards; and miscellaneous work too large or too difficult for the smaller press to handle. On the "Laureat" press he learns how to make ready and run cut forms and perhaps jobs in two or more colors. The time spent on the job presses is usually six months.

Hampton aims to train men for hard tasks. In the press-room the boy who feeds the large cylinder press has come to his work by way of the Dexter Folder. Here he learns how to handle a large sheet of paper and feed the magazine folder with accuracy and increasing speed. Every month, for example, thirty thousand Southern Workman sheets are folded. In addition, the Dexter Folder cares for all the other school publications. The boy who for two or three months feeds sheets of different sizes and stocks on the folder is in fine form to undertake the work of feeding the large cylinder press.

The Babcock "Optimus" press takes a large part of the boy's time and attention for three months. The student printer learns how to put on and take off large forms; how to register forms to the gripper line and how to register the printed form upon the sheet by the use of the guides; how to pack the cylinder preparatory to making ready; how to make good press proofs; how to fold correctly and line up pages; how to patch sheets after the pressman has marked them in order to get better printing results; and how to paste the make-ready sheets to the tympan. The student at every stage of his training is made to face conditions in the Hampton print shop which have been made as nearly as possible like those he is likely to find outside the confines of the school.

Following his work on the cylinder press, the student printer takes up general work in the office. He learns how to operate the stitching machine, the power cutter, and a saw trimmer on which furniture, leads, and rules are cut on the point system, on which cuts are squared and made type high, and rules mitred or mortises cut. He makes pads, gathers and insets book forms, trims books and leaflets, cuts cards, and helps supervise the work of some of the younger tradesmen. He becomes familiar with the routine work of a first-class shop. He cares for and operates electric motors (there are eight in the shop), prepares and mixes inks, cleans rollers and cuts with suitable chemicals, studies the uses of varnishes and driers used in making inks, regulates ink



PRINTING THE "SOUTHERN WORKMAN"

Students learn how to handle a Babcock "Optimus" cylinder press.

fountains, sets rollers, does work in underlaying and overlaying to produce better half-tone work, patches up make-ready sheets, and, in addition, he also gets a fair amount of instruction and practice in proof-reading. In short, he does whatever is expected of a regular apprentice and job pressman in a good, up-to-date print shop where commercial work is handled.

During the first year of the printing course students take up practical trade mathematical problems involving fundamental operations—addition, subtraction, multiplication, and division. They become familiar with the important kinds of paper and cardboard by studying actual materials. These first-year students are given what might be called merchandising mathematics as applied to the printing trade; that is, the study of problems in the buying and selling of stock, percentage of gain or loss, number of cards or sheets which can be cut from given amounts of stock, amount of material required for jobs in known lots, and estimating the cost of prospective and finished work.

Second-year printing tradesmen study problems relating to the point system on which all the modern type faces and spaces are now cast, sizes of type, relative type space required for given amounts of copy set in different sizes of type, paper and other materials required for given lots of work, economical paper-cutting, and miscellaneous work which comes up in the routine of shop practice. The object in all the shop mathematics is the cultivation of common sense in solving practical (not mere academic) problems. Whatever important trade problem in calculation the student is likely to meet in actual shop work, that problem the instructors try to help the student meet in advance and with some background of shop experience.

In the third year of the printing course there is no stated work in shop mathematics. The problems which arise in everyday experience are worked out on the spot. The plans for the fourth-year classroom work are now being developed and will probably include talks on the progress of printing and the discussion of printing problems in the light of present needs and opportunities.

A summary of the printing course in the current catalogue of Hampton Institute (the work of the Hampton printers), follows: "The course is arranged in periods so as to give each student an all-round training in the various branches of the trade—plain typesetting on newspaper and book work; general job work; tabular work, making up of book pages, stone work, etc.; making ready and feeding small job presses; pamphlet trimming; stock cutting, tablet making, proof-reading, and miscellaneous work. Each student will have practice in feeding the cylinder press and folding machine. Fourth-year students

are given practice in any line of work that may be thought necessary to make them more efficient. Lectures, reading, and study include topics connected with general printing, stereotyping, various processes of cut-making, estimates, stock, etc."

The bulk and variety of one year's work are suggested by the following figures: Pamphlets (amounting to 4,746,764 pages), 192,000; envelopes, 217,800; letter, note, and bill heads, 75,000; programs, 35,000; circulars, 80,800; cards, 125,000; blanks, 291,500; receipts and orders, 133,800; total number of pieces of printed matter, well over one million. Most of this work is done for Hampton Institute. The printing department is equipped to do more outside work than it has been doing.



STITCHING HAMPTON PRODUCTS

The Hampton-trained printers who have devoted one-third of their entire time—sixty-three hours each week—to academic studies, have learned in four years, not only how to make a

decent living for themselves and their families, but also how to serve their communities as safe race leaders.

They have helped to bring the light of knowledge and the fruits of true religion to thousands of men, women, and children. They have helped to put weak members of society on their feet, and have coöperated willingly with other leaders and workers to make telling demonstrations in better methods of teaching and community improvement. Practical, efficient, happy tradesmen have gone out from Hampton "honestly giving value for value," to quote from General Armstrong.

THE HAMPTON INSTITUTE

TRADE SCHOOL*

IX SHOEMAKING

AN unusual industrial opportunity awaits the Negro shoemaker. A careful study of Bulletin 129, published by the Bureau of the Census, which deals with "Negroes in the United States," shows that there was, according to the Census of 1910, one Negro shoemaker to every 163 Negro farm laborers; one to every 133 farmers; one to every 27 laborers in the building and hand trades; one to every 15 in saw and planing mills; one to every 14 on steam railroads; one to every 6 coal-mine operatives; one to every 5 waiters; one to every 5 male cooks; one to every 5 carpenters; and one to every 3 preachers.

Negro shoemakers and cobblers, not engaged in factory work, according to the Census of 1910 numbered 3739. This figure included 44 female workers. Negro semi-skilled operatives at work in shoe factories numbered 2485, including 167 female workers. These figures indicate that only twelve-hundredths of one per cent of all Negroes ten years of age and over, who were engaged in specified occupations in 1910, were associated with shoemaking as a distinct occupation.

Emmett J. Scott of Tuskegee Institute, and his associates who are interested in developing the National Negro Business Service, estimate that Negroes in the United States use every year many hundred thousand pairs of shoes, for which they expend \$50,000,000. "Colored people," says Albon L. Holsey of Tuskegee, "use enough shoes to keep ten factories with a daily capacity of three to five thousand pairs of shoes, busy throughout the year."

When these two sets of facts are placed side by side and are studied from the point of view of the industrial opportunity which awaits Negroes who, with proper training and a broad outlook on life, enter the trade of shoemaking, it is clear that the work which Hampton Institute is doing through its Trade School is significant,

* Other articles on the Hampton Trade School have appeared as follows: Carpentry and Cabinetmaking, May 1913; Blacksmithing and Wheelwrighting, January 1914; Bricklaying and Plastering, April 1914; Machine Work, January 1915; Tailoring, April 1915; Plumbing and Steam-fitting, December 1915; Painting, March 1916; and Printing, May 1916.

although relatively few Negro boys have taken the shoemaker's trade or are taking it at the present time.

It is also a fact that every year more and more requests are coming to Hampton Institute for men who are able to take up the teaching of shoemaking, or more colloquially "cobbling," in industrial schools in which an effort is being made to have industrial and academic work dovetail more closely.

The boy who enters the Shoemaking Department of the Hampton Trade School is treated from the first as an individual. He is given a simple task, such as repairing a heel, and is carefully supervised. He learns, for example, how to form a heel which will suit the shank of the shoe and how to build a heel to a height which will suit the ball of the shoe.

Again, the newcomer may be given what appears to be a worthless pair of shoes. He may be assigned one task after another on these shoes until finally he has put on patches, mended ripped seams, put on half-soles, built up heels, and given the shoes such a thorough cleaning that these seemingly worthless objects have a real value.

From three hundred fifty to four hundred pairs of shoes are repaired each month. Many of the students, including boys and girls, as well as instructors, have their shoes repaired by the student tradesmen. This means that the few boys who take the shoemaking course receive much practice and a wide range of experience.

The modern American shoe, which is made in factories where division of labor is carried to an extreme, is a strange and won-





derful production, and he who deals with it, whether as repairer, buyer, or seller, must be in his own line an expert.

For the first three months of his course, the student shoemaker learns to know and use his common tools, such as hammer, skiving and trimming knives, pulling-off nippers, heel-shaver and heel-burnisher, rasp, pegging awl, and harness needles. The instructor works side by side with the student, who learns by example. Later the instructor follows up the boy to see that the work is done as well as the boy really can do it.

During the next stage, which lasts about three months, the student is assigned repair jobs and receives pay for his work. He continues to do general repair work for the remainder of his first year, usually earning a larger amount each month. His experience and pay go hand in hand.

Thus it is that work in the Shoemaking Department, as in all other departments of the Hampton Trade School, becomes to the student something very real and something which has a money value. Naturally, some boys are quicker and better workmen

than others. To them come added rewards, and life in school becomes a preparation for larger life in after-school years.

In addition to the shoes which the tradesmen learn to repair, there is sent into the shop a fair amount of repair work on harnesses. Some of this harness repair work comes from the Agricultural Department. It includes repairing bridles and saddles, putting new pads in saddles, fixing tugs, mending collars, and fixing rips and breaks. While no special effort is now made to train students at Hampton as harness makers, the plan is to have them learn how to make the common repairs on harness.

During the second year of his course the student shoemaker does a better grade of repair work and is expected to turn out better results. As he proves himself capable he is given more difficult and more interesting tasks. In this year he receives more practice in the jobs on which he started to work during his first year, acquiring additional skill and, of course, more experience.

The third year, in a general way, is given over to a continuation of the work of the first and second years. Plans are now under way for making the fourth year supplement and enrich previous work. No attempt is made to turn out a large number of hand-made shoes. It is expected, however, that every student, before he receives a certificate in shoemaking, shall be able to make a good grade of custom or bench-made shoes.

There are in the Shoemaking Department a number of students who take shoemaking as their manual-training work. These boys, like the regular shoemakers, learn how to make shoe threads, how to bristle the thread, and how to use the awl in



sewing, how to handle shoe clamps, how to put on cement patches, how to put on heels, and how to sew broken inseams.

The instructor gives the boys each Saturday morning a practical talk. These shop talks deal with the different weights of leather and the kinds of chemicals which are used in tanning the leather and in finishing leather. They teach a great deal about the different kinds of hides from which leather is made, the durability of leather, and a thousand and one details with which every shoemaker needs to be familiar. In short, they cover the essentials of the shoemakers' business.

As a part of their work in shop arithmetic, the Hampton shoemakers are given problems dealing with the cost of stock and the prices which need to be charged in order to obtain specified profits. They receive practical problems in handling sides of sole leather. They learn how to compute the cost of the miscellaneous materials which are needed in shoe and harness work. Some of these materials are nails, thread, wax, ink, and bristles. They learn how to handle such items as insurance, shop rent, lighting, and heating, and are also given some ideas about handling the problem of their own labor return.

The shoemakers also receive special instruction in chemistry. A general course in chemistry is given to all boys. The special course for shoemakers includes the following topics: Tannic acid, leather, rubber, threads, inks, polishes, and waxes, leather and rubber cements, substitute rubbers, imitation leather, nails, etc.

Those who have finished the Hampton course and have gone





into shoemaking have had plenty of work throughout the entire year. The profits in this trade are good. While there may be in summer a lull in shoemaking, there is the opportunity at that time to do work on harness. The mere fact that shoemaking is an indoor trade is no reason why shoemakers who have been trained to have a regard for their health should not have in their shops good ventilation and thereby enjoy good health.

One successful shoemaker trained at Hampton Institute is Frank L. West, who, since 1906, has been in charge of the shoemaking department at Tuskegee Institute. Frank West was a poor boy of Macon, Ga., who heard in 1894 that at Hampton colored boys could work their way through school. With much difficulty he saved some money and entered Hampton. In 1896 he dropped out for a while but returned to finish his course, receiving a certificate in shoemaking in 1900.

Since leaving Hampton, Mr. West has taken seriously Dr. Frissell's Sunday-school message, "Boys, you must struggle." He has written two books on his trade — "How to Repair Shoes" and "How to Bottom a Weltd Shoe by Hand"— which are used as textbooks at Tuskegee and are considered most practical by those qualified to pass judgment. What Hampton Institute has made possible for Frank West to do at Tuskegee and in Macon, Ga., in a very conspicuous way, it has helped many others to do less conspicuously, but with no less real success, in smaller communities, where the village shoemaker is more than a tradesman and often one of the helpful leaders in community uplift.

